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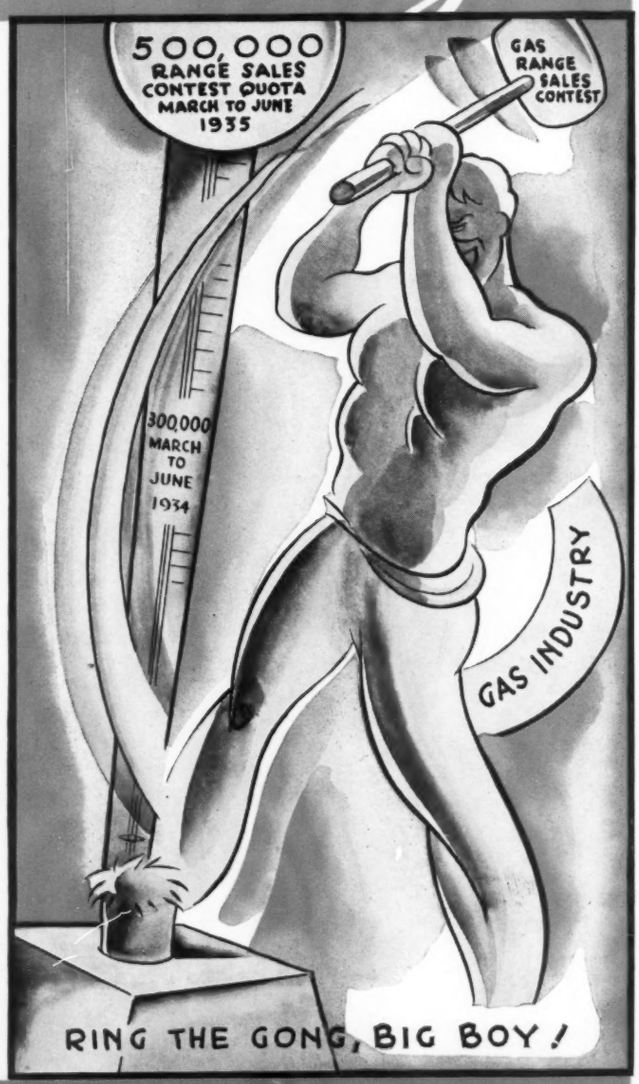

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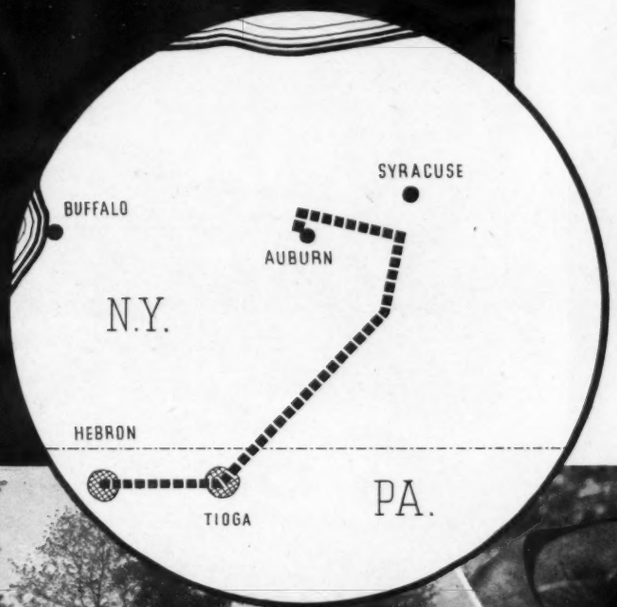

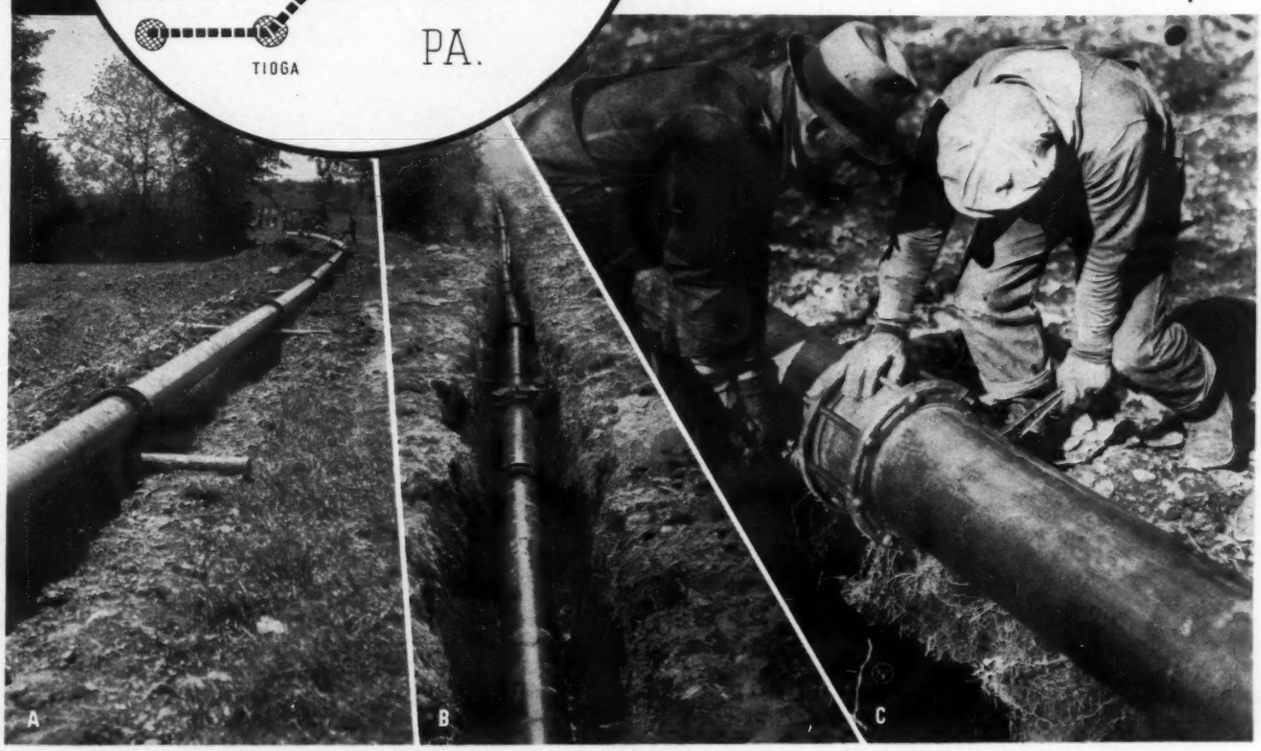

(A) This recently completed 10" extension runs 21.7 miles from New York State Natural Gas Corporation's Main Line No. 1 to a point near Auburn, N. Y. "Toughest going in 13 states" was reported. Record was 116 coupled joints per day. Tested at 800 lbs.

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(C) Dresser Couplings provided necessary deflections on the 100-mile 20" Main Line No. 1 between Tioga and Syracuse. Long stretches were coupled above the ditch, then lowered. Dressers were used for speed —plus permanent, *absolute* tightness.

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WESTERN GAS

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Publication Office: 810 South Spring Street, Los Angeles, Calif.
District Offices: 1064 Peoples Gas Building, Chicago; 447 Sutter Street, San Francisco

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WESTERN GAS is published by Western Business Papers, Inc., 810 South Spring Street, Los Angeles, Calif.

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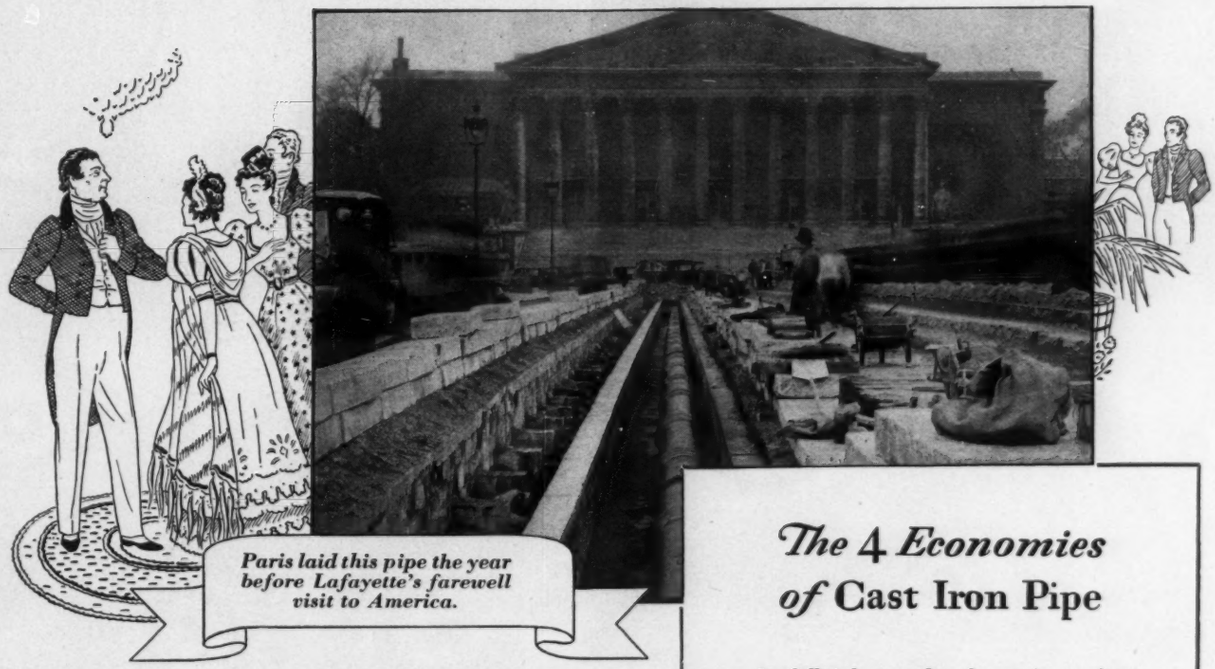
106 years underground *then back in service*



Paris laid this pipe the year before Lafayette's farewell visit to America.

ABOVE is shown an unretouched photograph of 106-year-old cast iron pipe, with bell-and-spigot joints, being relaid across the Pont de la Concorde in Paris. Installed in another part of the city about 1825, this section was taken up and relaid in 1931. Each pipe was in such good condition that it could be relaid immediately, and the rest of the original line of which this section was a part is still in service underground. Other cities in Europe and America can point to cast iron pipe, with bell-and-spigot joints, still in use after serving 100 to 200 years and longer.

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2. Official reports on file in the office of a prominent technical publication, prove that cast iron pipe is *cheapest to maintain.*
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4. When replaced by larger pipe, or a main is abandoned or rerouted, cast iron pipe *pays a final dividend in salvage value.*

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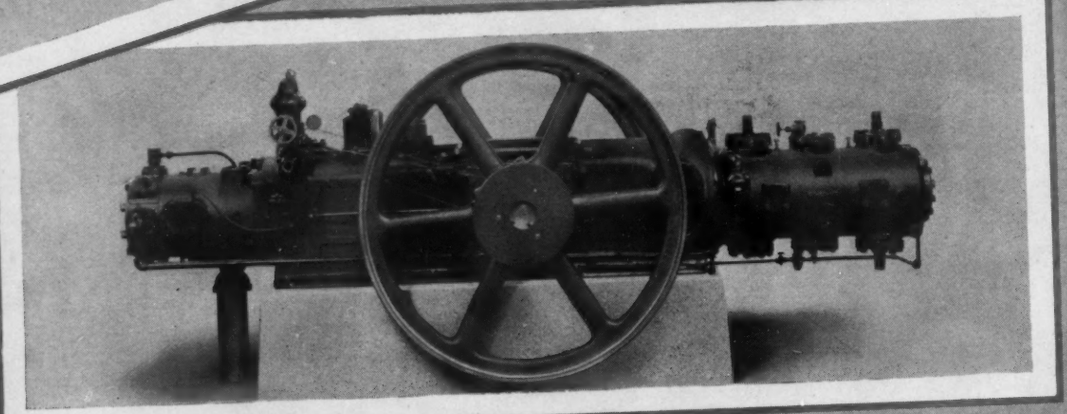
Now.. SMALL QUANTITIES OF GAS ARE HANDLED *Profitably* —

There is no simpler compressor unit than this to operate — and it may even be equipped for automatic operation so that scarcely any attention is necessary.



BY means of this economical compressor unit, enough gas may be sold from a small well to pay back the investment in six months. Earnings from then on may be clear profit — minus a small amount for operation and maintenance.

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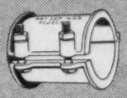
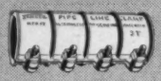
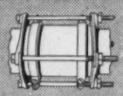


EMERGENCY PIPE CLAMP

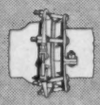


PIPE LINE CLAMP

PIPE JOINT CLAMP

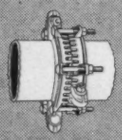


COLLAR LEAK CLAMP



BELL JOINT CLAMP

SPLIT COUPLING CLAMP



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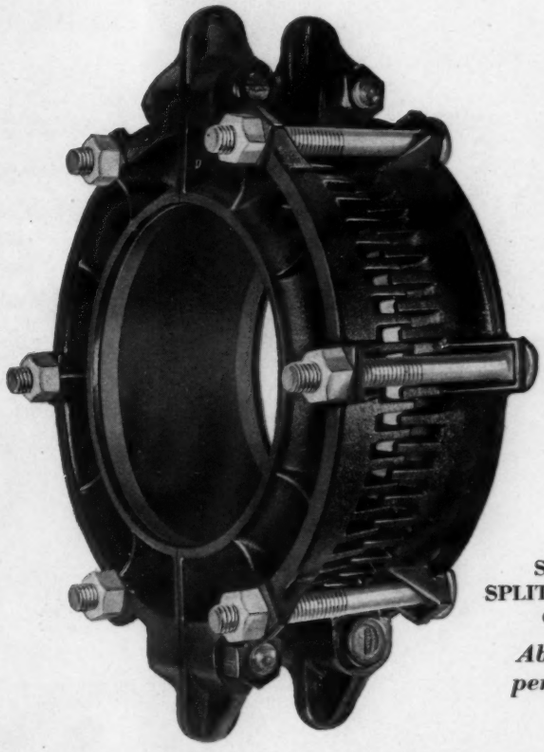

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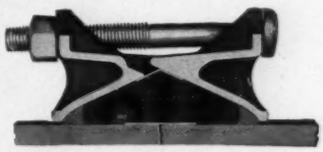

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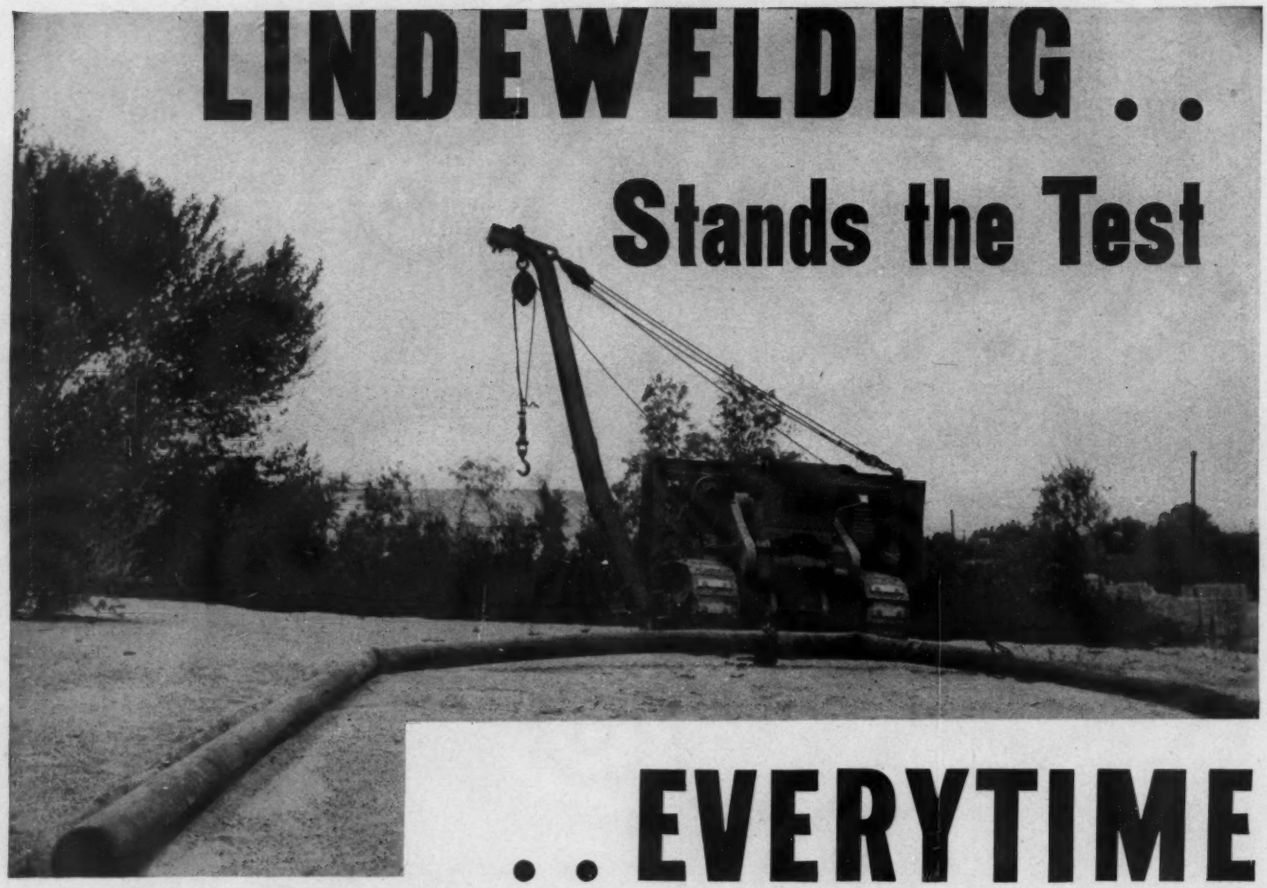

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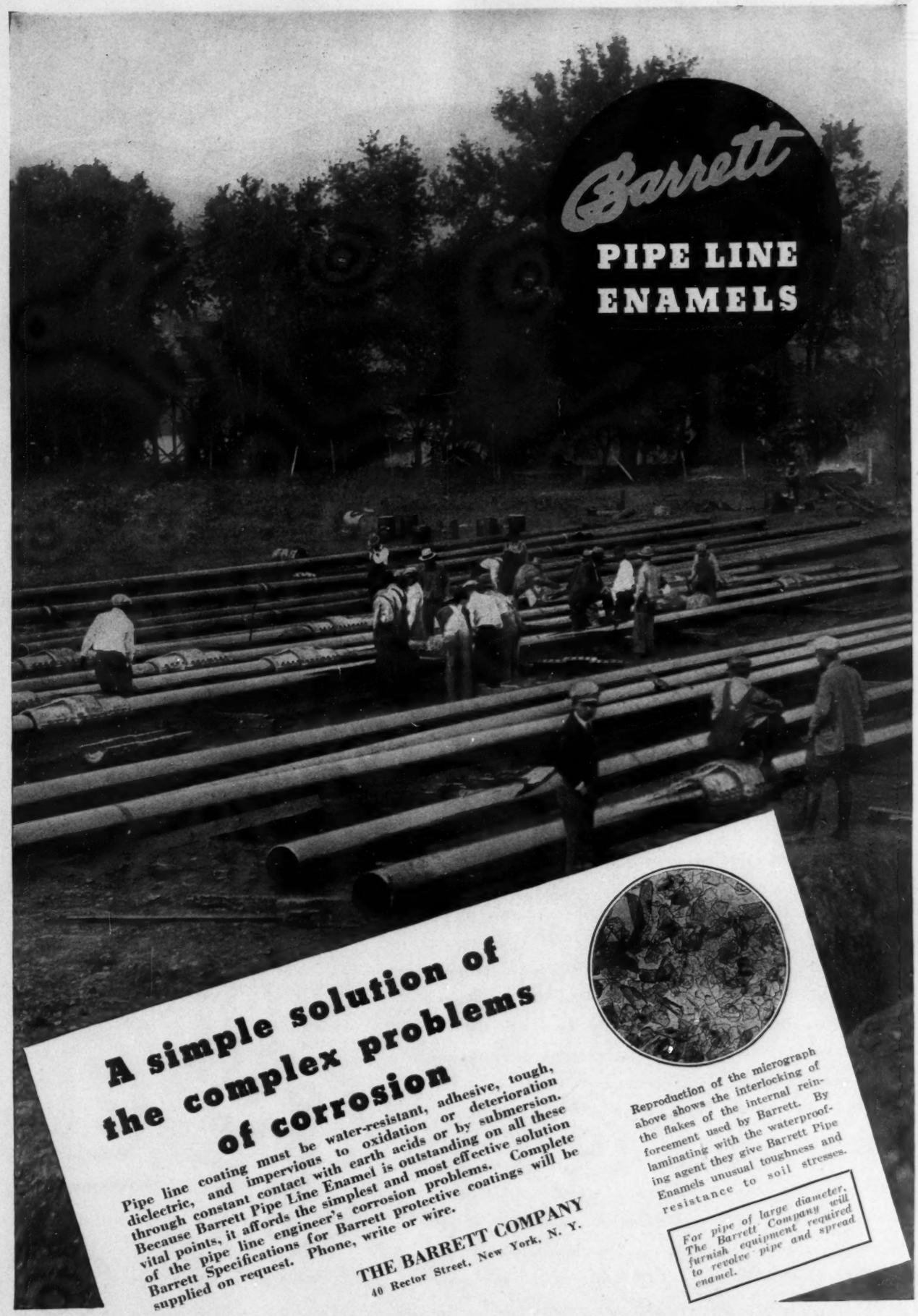

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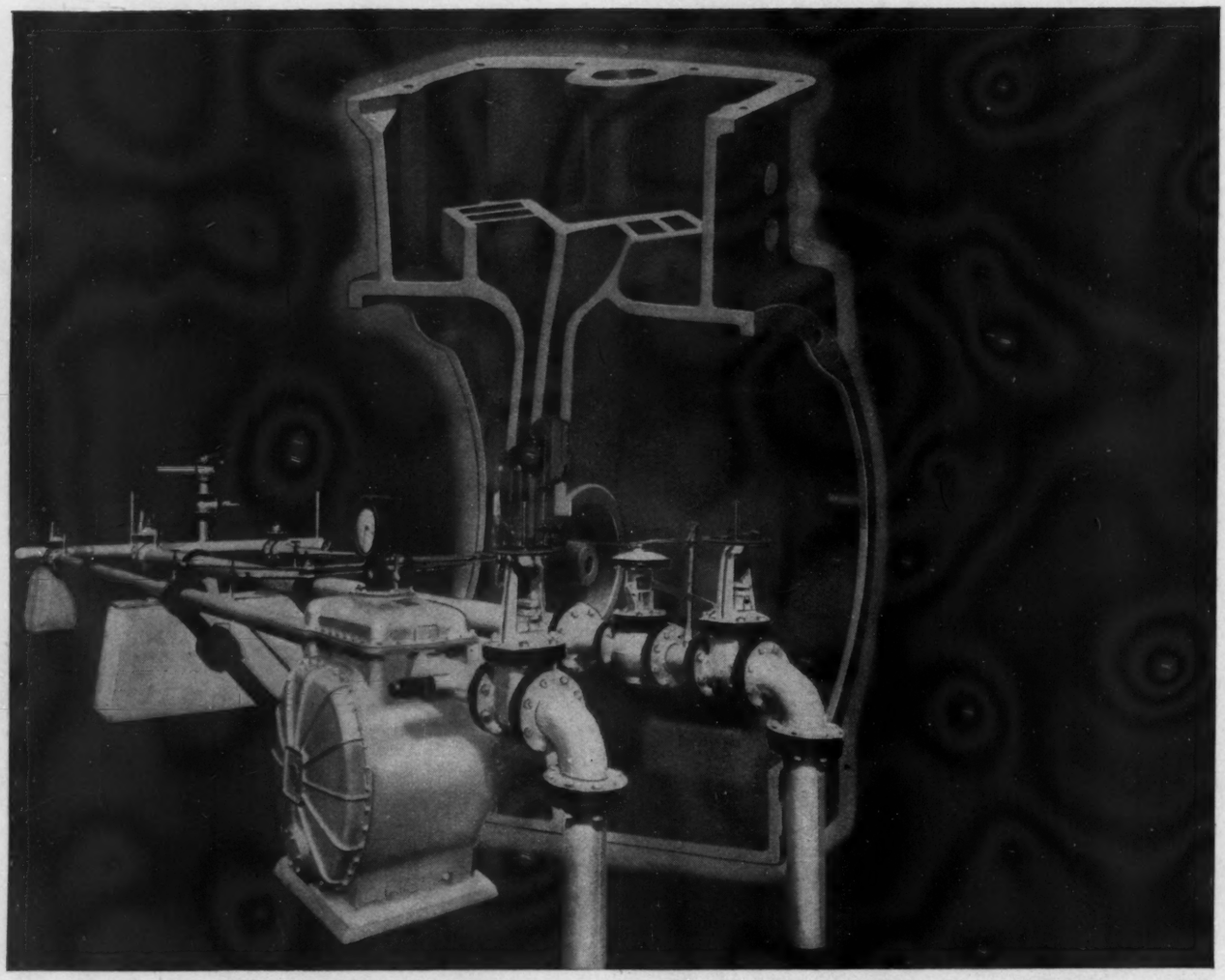

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March, 1935

WESTERN GAS

"Reg.U. S. Pat. Off."

Vol. XI, No. 3

A Monthly Journal of the Gas and Gas Appliance Industries in *Western America*

The Wheeler-Rayburn Utility Bills

FEDERALIZATION of the country's utility services, long seen as a determined ambition of the present administration at Washington, comes further into the open in House Bill 5423 and Senate Bill 1725. Introduced respectively by Representative Sam Rayburn, chairman of the House Committee on Interstate Commerce, and Senator Burton K. Wheeler, chairman of the corresponding committee of the Senate, these administration measures at one pass of the legislative wand would dissolve utility holding companies which operate in interstate commerce.

Nationalizing of all utilities, interstate and otherwise, could follow in rapid sequence, since the effect of the measures is to eliminate the coordinating services of holding companies, make operating companies common carriers, place regulatory authority now held by the states in Federal commissions, enhance the scope of such regulation so as to deprive management of independent authority, and at the same time to free all Governmental power enterprises from such regulation.

Title 3 appended to the Rayburn Bill before its introduction into the House would give the Federal Trade Commission jurisdiction over all natural gas transmission systems located in more than one state, without regard to whether they are holding companies. This phase of the bill utterly ignores the character and requirements of a natural gas enterprise, with its essential interdependence of producing, transmission and marketing branches. Transmission systems would become common carriers under the proposed measure, their rates, operations, valuation and financing subject to Federal Trade Commission ruling.

In addition to placing interstate natural gas transmission under the Federal Trade Commission two other aspects of utility service are dealt with in the bills:

1. Financial: Holding companies are required to register with the Securities and Exchange Commission, on penalty of being deprived of use of the mails and other channels of interstate commerce. Only companies operating entirely within a state are exempted from this requirement, which also sets up rules covering the issuing of securities and virtually all financial transactions.

2. Production, transmission, and sale of electricity in interstate commerce: Placed under jurisdiction of Federal Power Commission. Through the provision including companies interconnected with interstate systems, many intra-state operating companies are brought under this Commission's jurisdiction, which would cover functions now performed by state public service commissions. Interstate lines (and interconnected lines) are made common carriers, which introduces the possibility of forcing transmission of government-produced power or interconnection of government power plants.

The measures also raise restrictions against holding companies controlling both natural gas and electric subsidiaries, or domestic and foreign subsidiaries.

After January 1, 1936, contracts for service and construction between holding companies and subsidiaries are prohibited, except under rules for mutual service companies to be set up by the Federal Power Commission.

After January 1, 1938, holding companies must divest themselves of "geographically and economically unrelated properties."

And after January 1, 1940, holding companies are required to dissolve or reorganize along lines which prevent their functioning as holding companies.

Thus there is presented the prospect for immediate and drastic regulation by the national government, with present restriction on relations of holding companies and their subsidiaries, followed in five years by holding company dissolution.

THESE measures evidently proceed from a desire to inaugurate a "planned economy" for the utilities, involving re-grouping operating properties along arbitrarily conceived regional lines—all to be closely administered from Washington. If existing corporate and individual investments must be destroyed in the process, the end justifies the means—so the reasoning must run. It is perfectly clear that if this type of confiscatory action can be meted out to the utilities, no other major industry can feel itself immune. Constitutional questions involved in such legislation are multifold, but this is not the time to rest on hopes of legal redress.

Coming as a climax to the persistent campaign of utility harassment which has emanated from Washington these past two years, the Wheeler-

Rayburn proposal naturally brings a storm of protest from the industry. The chief executives of 18 major utility groups immediately after introduction of the bills communicated with their House and Senate sponsors urging that time be allowed the industry to present its case adequately and that hasty action imperiling the whole utility structure be avoided.

Dr. Hugh S. Magill, president of the American Federation of Utility Investors, issued a statement protesting against the administration's putting utility holding companies on the rack, while ignoring holding companies in other industries, and predicted tremendous losses to 10 million investors in utility securities from the proposed forced liquidation of holding companies.

Threatened destruction of values has prompted many utility managements to take the situation to their stockholders.

APPARENTLY the industry was expected to sit supinely by and witness the process of its dissolution, for President Roosevelt in a March message to Congress, while this legislation is under consideration in committee, characterized the industry's efforts to defend itself as "propaganda." His message was strongly worded in support of the Wheeler-Rayburn measures which, he stated, bear out recommendations of his National Power Policy Committee; it sharply condemned the whole institution of utility holding companies. Press comments pointed out that the message was in complete disregard of the President's recently adopted policy of silence on pending legislation, and Congressional opposition greeted it with charges of "lobbying from the White House" and "pure propaganda."

The part played by holding companies in the extension of utility services in this country is common knowledge. Without them the coordination of properties into large systems, with corresponding economies to the public, would have been impossible. While there have been some abuses of the system, utility leaders have made notable progress in their elimination in the past several years, and are anxious to cooperate in development of constructive legislation for preventing their recurrence. The Wheeler-Rayburn measures, however, are not concerned with preserving values of a time-tried system; like so many other New Deal proposals they prefer to scrap old methods in favor of new ones which are more susceptible of control from Washington.

OF particular concern to the gas industry is Title 3 of the Wheeler-Rayburn bills, previously referred to, which deals with the sale and transmission of natural gas in interstate commerce. Except for the retail sale of natural gas in local distribution the Federal Trade Commission is given jurisdiction over all facilities for such sale and transmission. Every distributor is required to "furnish natural gas to, exchange natural gas with, and transmit natural gas for any person upon reasonable request therefore" in such a manner and for such terms as prescribed by the Commission. Financing, rates, service practices, valuations, form of accounts and reports, all fall under the Commission's authority.

Anyone with even a superficial knowledge of natural gas operations realizes the utter impossibility of conducting a transmission system on a "common carrier" basis. Bringing natural gas to the ultimate consumer must proceed as one uninterrupted operation, from the well head to the burner tip. It is impossible to isolate transportation from the production and distribution functions.

Pipe lines are designed with capacity for definite markets, and the obligations assumed to maintain uninterrupted supplies to those markets do not allow of transporting other operators' gas on demand.

To meet peak loads a natural gas system must have instant control of its supply sources, which would be impossible under a common carrier status.

A gas line operating as a common carrier would be forced to handle gas ratably at times when its capacity was insufficient to transmit all gas offered. This would curtail its own gas and might prevent filling its public utility obligations.

Much of the marketing advantage of natural gas to industries would be lost if continuity of supply were to be prejudiced, and loss of industrial contracts would necessarily raise rates to domestic users.

Since natural gas is a fugitive substance pipe lines on a common carrier basis might be forced to transport for other operators, gas drawn from under their own acreage, in which they have made investment for the protection of their market obligations.

The physical nature of natural gas suggests other obvious reasons why the common carrier plan is impracticable. Supplies from various sources differ in heating value, impurities, moisture content, etc. Gas supplies must be closely controlled to be made continuously fit for transportation and use.

IT is pertinent to note that there is no analogy between common carrier operation of natural gas lines and of oil lines or railroads. Oil may be stored above ground and accumulated for peak demand. Railroads assume no time obligation for delivery, and also are able to store freight at both shipping and delivery points.

Natural gas systems are operating at high efficiency, and there are no complaints on the type of service they render. Their operation as common carriers could not improve service, and would add to cost of operation.

In recognition of such factors as the above, natural and manufactured gas have always been exempted from common carrier requirements under the Interstate Commerce Act, and as late as January of this year Congressman Rayburn, one of the proposed Act's sponsors, stated on the floor of the House that the classification of pipe lines which exempted gas was deemed correct. It is difficult to understand the sudden change of opinion which admitted Title 3 to the present bills.

What reception the utilities will get at the hands of Congress is problematical. Certainly the situation calls for organizing strong protests inside and outside the industry. Business in general may have had its fill of experiments and regulatory excursions of the New Dealers; perhaps the utility issue can be made a rallying point from which to start a return of government to its legitimate functions.

Nation-Wide Sales Contest *on* Modern Gas Ranges

Goal: 500,000 sales . . . . $9,000 in cash prizes

SALES departments of gas utilities in all sections of the United States last month received definite announcement of a concerted nation-wide gas range sales contest. Conducted through the Domestic Range Committee of the American Gas Association, the contest sets a goal of $30,000,000 in retail gas range sales from March 1 to June 30. Gas companies may select any 60-day period within these dates for their participation.

H. M. Brundage, Jr., chairman of the 1935 Domestic Range Committee, brought word of the contest to the Mid-West Regional Gas Sales Conference at Chicago, and Lucian Kahn of The Estate Stove Co. presented the contest plans to the Eastern Regional Natural Gas Sales Conference. The following report is taken from portions of Mr. Brundage's paper, supplemented by information received from A.G.A. headquarters.

Objectives of Campaign

The campaign goal of $30,000,000 is based on an objective of 500,000 gas ranges of all classes to be sold during the peak period of March 1 to June 30. This is 37.6 per cent of the quota set by the American Gas Association for the entire year of 1935. Last year 300,000 ranges (31.5 per cent of the year's total) were sold from March 1 to June 30.

Because of the recognized importance to the industry of completely equipped ranges, only fully-insulated, fully-enameled ranges with oven heat control and automatic top-burner lighting, A.G.A. approved, will be counted in the contest.

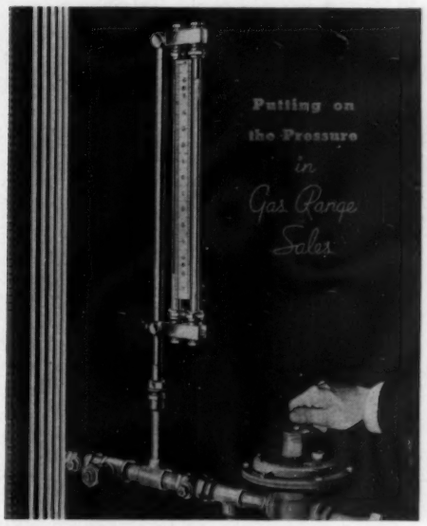
The underlying purpose of the contest is to replace obsolete cooking equipment with high grade modern gas ranges, forestalling competition of other fuels, and assisting utilities to "grade up" the quality of ranges sold in their area.

Three-Way Financing

Gas range manufacturers, local utilities, and the American Gas Association will bear an equal share in campaign responsibility. Thirteen range manufacturers and five accessories manufacturers have already committed themselves to underwrite a share in the campaign costs, 1/3 of the funds coming from this source in proportion to each manufacturer's unit sales for the preceding year. The A.G.A. Executive Board has authorized the Association to cover another 1/3 of the campaign costs, and utilities registering for the contest, through fees varying with size of company and ranging from $10 minimum to $75 maximum, will supply the remaining 1/3. Utility interest already evident assures the committee of general participation, expectation being that there will be over 1,000 registrants for the contest.

Since the dealer is responsible for some 65 per cent of the total of all gas ranges sold, the campaign is properly keyed to insure his maximum participation. Contest plans were submitted to the National Retail Furniture Dealers Association at the organization's recent Chicago convention, and approval was given them. Thomas E. Bullion and Charles A. Luther, members of the dealer contact sub-committee, represented the Gas Range Committee at the above convention.

Contest accomplishment will be gauged by combining company and dealer sales in each territory. Total dollar value of specific gas ranges per 1,000 domestic meters will be the basis for judging success of competing utilities. This makes it necessary for utilities to obtain the dollar volume of acceptable ranges from dealers in their territory, adding this figure to their own sales for purposes of contest reporting. Most utilities know very little about what other range outlets in their territory are doing, and the contest should serve to stimulate and strengthen dealer contacts.



Cover of campaign announcement issued by A. G. A. Gas Range Committee

This nation-wide gas range contest is open to all gas companies which in order to give equal opportunity to all, large or small, will be classed in six divisions as follows:

Division 1. All companies having more than 100,000 domestic meters.
Division 2. 50,001 to 100,000 domestic meters.
Division 3. 20,001 to 50,000 domestic meters.
Division 4. 5,001 to 20,000 domestic meters.
Division 5. 1,001 to 5,000 domestic meters.
Division 6. 1,000 or less domestic meters.

Contest Awards

A total of 18 company awards and 66 individual cash prizes, totalling nearly $9,000, will be distributed among the winning contestants. To the three companies attaining the highest score in each division (computed on the basis of dol-

(Continued on Page 37)

● Blasting stumps along the right-of-way for American Michigan Pipe Line Co.'s 51½-mile line linking Muskegon to Mecosta County fields.

When Natural Gas . . . it brought a sales job

By BERNARD T. FRANCK

MUSKEGON GAS CO. serves a population of approximately 60,000, residing mainly in the cities of Muskegon and Muskegon Heights, Mich. These communities are highly industrialized. Their principal sources of income are the manufacture of automobile parts and accessories, office equipment, electric refrigerators, bowling alley and billiard equipment, knitted wearing apparel, paper, and an assorted line of foundry products.

B. T. Franck

Obviously, communities of this kind suffered acutely from the effects of the depression from which, it appears, the country is emerging.

Because of the discovery in 1928, of a gas and oil field adjacent to Muskegon, pressure of public opinion at that time compelled Muskegon Gas Company to change over from manufactured to natural gas, despite the fact that officials of the company were of the opinion that the available gas reserves in this field were not adequate to assure a lasting supply.

Natural gas was turned into the company's mains on September 1, 1928. On that date it had 9,261 customers.

By December, 1930, the supply was depleted to the point where Muskegon Gas Co. could no longer maintain satisfactory natural gas service. Therefore, at the end of 1930 natural gas service was discontinued and the manufacture and sale of 530 B.t.u. water gas was resumed.

On December 31, 1930, Muskegon Gas Co. had 11,192 customers.

During the period of natural gas service the company had acquired about 850 househeating customers. The quality of the gas varied. From an initial heat value of about 1,000 B.t.u. per cubic foot, it gradually increased to approximately 1,400 B.t.u. per cubic foot. This increase in heat content was due to the diminishing of the natural gas supply and the subsequent increase in casinghead gas as a substitute.

From Jannary 1, 1931, to August 28, 1934, due to the return to manufactured gas at an equivalent cost of approximately twice that of natural gas and the transition through a period of unprecedented economic distress Muskegon Gas Co.'s househeating customers had shrunk from approximately 850 to 38.

On August 28, 1934, it was publicly announced that natural gas would again be brought to Muskegon and Muskegon Heights. The following paragraphs present a brief account of the discovery of the new natural gas field and the construction of the pipe line from the field to market.

Gas Supply

On March 17, 1933, Taggart Bros., Inc., of Big Rapids, Mich., brought in the discovery well in Austin Township, Mecosta County, Mich. Gas was struck in the upper Marshall formation. This sand has been the producing sand in all of the wells thus far drilled in this field.

Additional drillings proved successful and on January 10, 1934, Taggart Bros. brought in No. 4 well with an open flow of 34,000,000 cubic feet. Up to the present time this is the largest gas well ever brought in in Michigan.

Immediately after the completion of No. 4 well, American Light & Traction Co., parent company of Muskegon Gas Co., started negotiations with Taggart Bros. for the purchase of gas from their field for sale in the territory supplied by Muskegon Gas Co., a distance of 55 miles southwest from the field.

A gas purchase contract was consummated between the two parties, subject to the proving of an adequate reserve in the field sufficient to assure a lasting gas supply to the customers of Muskegon Gas Co.

Subsequent drillings and surveys by eminent geologists indicated the availability of an ample supply of natural gas for many years' use. As stated previously, the announcement of its proposed transmission to Muskegon and Muskegon Heights appeared on August 28, 1934.

Line Construction

American Michigan Pipe Line Co., a Michigan corporation, also a subsidiary of American Light & Traction Co., authorized construction of the pipe line and actual laying of the pipe started on September 17, 1934, from the field end of the line. The pipe line was built by the United Light & Power Engineering & Construction Co. of Davenport, Iowa.

Approximately 500 men were employed on two shifts of 40 hours per man per week. These men at times were spread over a distance of as much as 20 miles along the line. About 60 per cent of the country through which the pipe line was built was wooded area. This, of course, necessitated a large crew of right-of-way cleaners.

● Looking down the south cut on west bank of Little Muskegon River. Two 6-inch lines were laid, using 800 pound river clamps 20 feet apart.

Came to Muskegon

to Muskegon Gas Company

Coordinator of Sales
American Light & Traction Co.
*Chicago, Illinois**

As much as 2500 pounds of dynamite were used in one-half mile for cleaning out tree stumps. The first 25 miles, coming toward Muskegon, is through hilly, heavily wooded country. Despite this, better than a mile of pipe in the ground per day was averaged.

The line is 8⅝-inch O.D. steel pipe, all welded construction with line valves approximately every 6 miles. One river crossing was all that had to be made in the entire stretch. This crossing consists of two 6-inch lines of extra heavy pipe with valves on either side of the river. The lines are buried 3 feet below the river bottom with 800-pound river clamps spaced 20 feet apart on each line.

As stated before, actual construction began on September 17, 1934. On November 8, 1934, at 12 o'clock noon, the city limits of Muskegon were reached. This completed 51½ miles of 8-inch line in 46 working days.

Change-Over

Natural gas was turned into the city mains on the morning of November 13, 1934.

While the construction of the pipe line was in progress the conversion of customers' appliances to burn natural gas satisfactorily was also under way.

The territory served by Muskegon Gas Co. was divided into six districts during the changeover. Each district represented one distinct part of the distribution system which could be segregated from the rest of the system when natural gas was turned into the mains. It was necessary to make a few minor changes and temporary connections in the system in order to accomplish this. The burner port drilling and orifice adaptation method of converting appliances was followed in Muskegon. The changeover work was therefore divided into two parts—the survey and burner port drilling, and the actual conversion.

For the survey and burner port drilling part of the work a crew of 12 local men, one supervisor, and one special man was placed in each district. The 12 local men per crew had no previous gas experience and were trained in a special conversion school which was conducted before the changeover started. The supervisors and special men on each crew were experienced conversion men. All burner ports were enlarged by drilling to such a size that delivery on natural gas would not be over 15,000 B.t.u.'s per hour per square inch of port area.

*The author makes grateful acknowledgment for their collaboration to Harry J. Gabel, superintendent, American Michigan Pipe Line Co., Muskegon, Mich.; Harry S. Parker, superintendent of distribution, Muskegon Gas Co., Muskegon, Mich.; C. M. Highstrete, distribution engineer, Muskegon Gas Co., Muskegon, Mich.

All range top burners were drilled with an electric hand drill on the consumers' premises but it was necessary to remove all oven burners and take them to a drilling station where they were drilled on a small bench drill press. The hardness of the oven burners necessitated the use of a drill press for drilling the ports.

One drilling station was established in each district with a driller in attendance. The drill presses were located in rented garages which also served as district headquarters. These drilling stations were moved from time to time as the work progressed. Each crew was provided with one light truck and a driver who picked up and delivered all oven burners and assisted wherever needed.

In addition to enlarging the burner ports, a complete survey was made of all the gas-burning equipment. A cotton and rock wool filter was inserted at the meter, and meters were sealed. The filter was installed to prevent rust and particles of oil fog from reaching the pilots when operating on natural gas. All of this work, of course, was completed before any natural gas was turned into the distribution system.

Natural gas was turned into one district at a time and all the crews were placed in that district to convert the district as rapidly as possible. Thus the conversion crews were shifted from one district to another until the entire city was converted. The adaptation method of converting orifices was used throughout. This necessitated sawing off all needle points on cocks and giving every burner a fixed orifice. The size of the orifice was determined from the standard B.t.u. ratings given by the manufacturer or the American Gas Association. Thus, in Muskegon, practically all gas appliances now have fixed orifices.

The changeover was handled by an organization entirely separate from the regular distribution department. One permanent employee of the Muskegon Gas Co., who acted as general supervisor of the changeover work, was the only employee of the changeover organization who was not hired just for the duration of the changeover. The entire organization consisted of 100 men, including clerks, stock keeper, repairman and welder.

Separate offices, stock room, and repair shop were established for the exclusive use of the changeover department and all matters pertaining to the changeover were handled through the changeover

(Continued on Page 52)

Hazards *from* Natural Gas

Reporting Tests of Natural Gas and Health

WESTERN GAS for February mentioned an experiment conducted at the Los Angeles Gas and Electric Corp. gas works, which gave positive proof that natural gas is non-toxic. Mr. Corfield, in this paper given before the Spring Technical Conference of the Pacific Coast Gas Association held March 7 and 8 at Los Angeles, describes this test in detail. The first section of his report deals with another series of tests to determine diffusion characteristics from gas leakage in a typical room.—*Editor.*

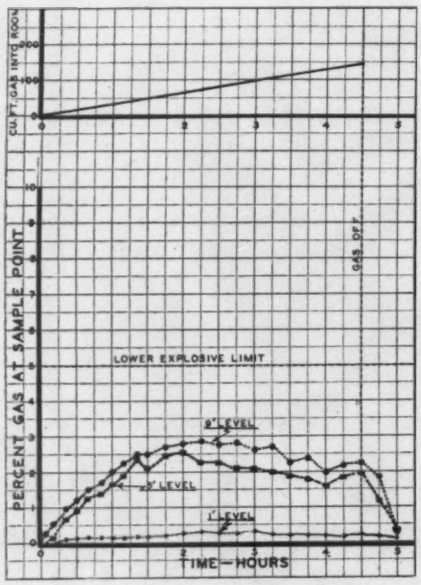


FIG. 1.

TEST NO. 1. EFFECT OF GAS LEAK ON ROOM ATMOSPHERE

1500 cu. ft. room — gas leak at 31 cu. ft. per hour from gas range oven vent at west wall—window and door shut—strong draft against door—samples taken at various levels in center of room.

IT IS the purpose of this paper to describe recently completed tests which prove that natural gas, when used with reasonable precaution, is not only safe and healthful, but practically foolproof.

EFFECT OF GAS LEAK ON ROOM ATMOSPHERE

The first series of tests were to determine the diffusion characteristics, and possibility of explosive mixture formation, from gas leaks into a typical room.

Description of Room: The room had a cubic content of 1,500 feet 11½ by 13 by 10 feet high); one outside wall of brick, with tight-fitting iron-frame swing window; one inside wall of hollow tile; two inside walls of wood and glass, with one door opposite window, tight-fitting except for ½-inch crack at bottom; cement floor; wallboard ceiling, tightly nailed to rafters with wood strips and sealed at wall edges with moulding. A curtained enclosure was built outside the door, to protect it from drafts (when curtain was lowered) and to provide a dead-air space for entry and exit during tests. The interior was carefully gone over and all potential leakage cracks and other openings filled with putty. It is felt that this room had considerably less air leak than would be encountered in any normally constructed building.

Rubber sampling tubes were installed, with intakes in the center of the room, 1, 3, 5, 7, 9 feet above the floor (the latter being 1 foot below the ceiling).

Two sources of gas leak were provided: first, oven vent of gas range placed against center of wall; second, open house pipe discharging horizontally 9 inches above floor.

Analysis of Room Atmosphere: Samples were withdrawn through the sampling tubes, by aspirator bulb, and analyzed for gas content with previously calibrated hot-wire leak detector (equipped with air dilution device for high gas concentrations), periodically checked with "Orsat" gas analyses of oxygen content.

Results of Tests:

Test No. 1 (Fig. 1): Gas leaking from oven vent at 31 cu. ft. per hour, with window and door shut but strong draft against door. The concentration at the 1 foot level was negligible; the 5-foot level was slightly lower than the 9-foot level, which latter reached almost 3 per cent gas and then fell off, presumably due to increasing draft under door; maximum concentration was reached in 2 hours and gas turned off in 4½ hours; practically no gas remained in room ½ hour after gas was turned off.

Test No. 2 (Fig. 2): Same as Test No. 1, except only slight draft against door. The 1-foot level built up to 2 per cent gas, and the 5- and 9-foot levels to 4.5 per cent gas, in 4 hours, and then remained constant for 1½ hours, at which time gas was shut off; the concentration at the upper levels then rapidly dropped.

Test No. 3 (Fig. 3): Same as Test No. 2, except that door was curtained with blanket to protect from draft. The one foot level built up to 2 per cent gas, the 3-foot level to 4 per cent, and the 5-, 7- and 9-foot levels to 7.5 per cent; explosiveness (5 per cent gas) was reached in 2½ hours and maximum concentration in 5 hours; gas disappeared rapidly from the upper four levels after leak was shut off, explosiveness being eliminated in 1 hour's time.

Guy Corfield

Test No. 4: Gas leaking from open pipe at 300 cu. ft. per hour. Window and door closed and door curtained. Gas concentration at all levels rose rapidly, reaching lower explosive limit in 15 minutes, passing upper explosive limit (15 per cent gas) in 1½ hours, and continuing upward. Approximately half the gas entering the room was leaking out, under the door and through the window casing and unobserved minute openings. Concentration rose to 20 per cent gas in 2¼ hours, at which time the test was discontinued to avoid excessive leakage of gas into other rooms of the building.

Test No. 5: Gas leaking from oven vent at 15 cu. ft. per hour, with window and door closed and slight draft against door. All levels were approximately the same gas concentration, rising to 2.5 per cent gas in 4 hours, and then dropping slightly.

Test No. 6: Same as test No. 5, except gas leaking at 5 cu. ft. per hour. All levels were approximately the same, the gas rising to a maximum of 0.6 per cent concentration in 4½ hours.

Conclusions: The conclusions drawn from this series of tests are:

1. The ordinary gas leak that will be encountered in the average room or other enclosure will not result in the formation of an explosive mixture.

Leaks?

to Determine the Effect Leaks on Room Atmosphere

By GUY CORFIELD *Chemist*
Los Angeles Gas and Electric Corporation

2. The average leak complaint can be handled in a routine manner rather than as a special rush job, as it will not involve a hazardous condition.

EFFECT ON PERSONS OF EXPOSURE TO NATURAL GAS

It has been assumed or asserted, by uninformed or designing persons, that natural gas is poisonous to the human system, despite evidence to the contrary in technical and medical literature. To prove that natural gas is harmless to persons, until it is present in such large proportion as to exclude a necessary amount of oxygen (simple asphyxiation) the following human exposure test was made.

Description of Test: The test room already described was made still more air tight by sealing the window frame with adhesive tape, gasketing the door all around (including the bottom) with rubber tubing, and painting the entire interior of the room with thick paint.

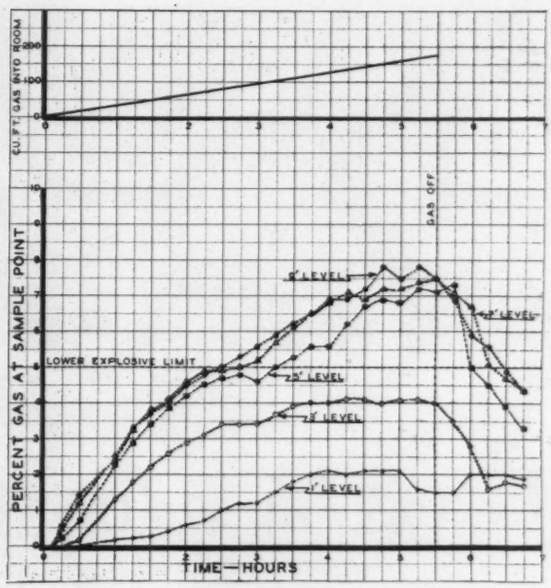


FIG. 3.

Test No. 3 (Conditions same as Fig. 1). Window and door shut—door curtained.

On the morning of the test, gas was passed into the room until the concentration was raised to 25 per cent. Then five persons entered the room, with gas still passing in to compensate for ventilation during door opening and natural room leakage. These subjects remained continuously in the room for 1 hour and 15 minutes. Fig. 4 shows the concentration of gas, oxygen and carbon dioxide during this period. It will be noted that the gas concentration went as high as 29 per cent, reducing the oxygen to 14.2 per cent; carbon dioxide concentration rose gradually to 0.6 per cent, and then remained practically constant. Gas was turned off after the oxygen dropped to 14.2 per cent.

Discussion of Test: The subjects were all office men or semi-office men, in normal health, not habitually or previously

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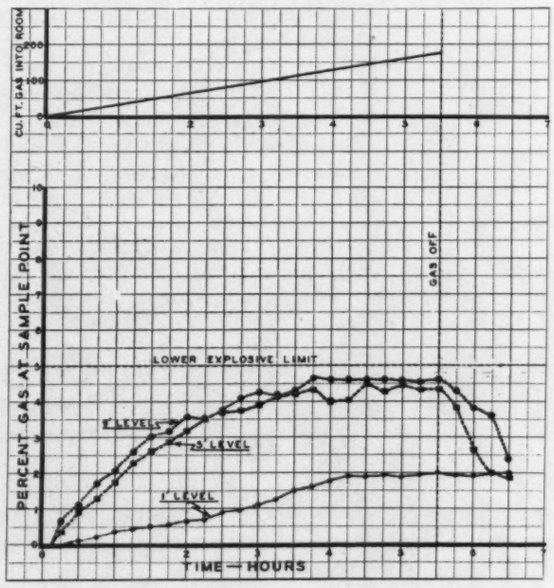


FIG. 2.

Test No. 2 (Conditions same as Fig. 1). Window and door shut—very slight draft against door.

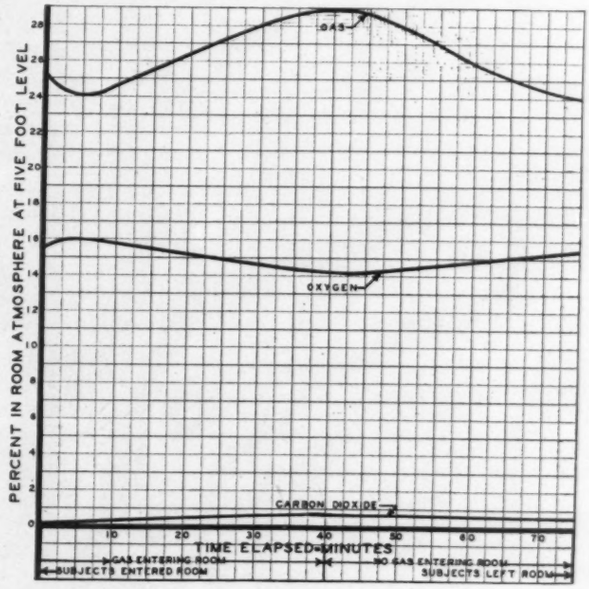


FIG. 4.

Curves showing room atmosphere conditions during exposure test of persons to natural gas.

Delegates attending first annual welding conference at Texas Technological College, Lubbock.

Texas Welding Conference Summary

AT TEXAS Technological College, Lubbock, Texas there was held in February the first Annual Welding conference, conducted by the Department of Mechanical Engineering, School of Engineering. An attendance of 294 persons, not including students, all interested in the subject of welding, indicates the success which attended the meeting, dates for which were February 14 and 15. According to J. C. Hardgrave of the Department of Mechanical Engineering, 95 per cent of those attending expressed a desire to return next year for the second conference.

Through the courtesy of R. F. Hinchey, vice-president and general manager of West Texas Gas Co. which headquarters at Lubbock, the following summary of papers read at the welding conference has been made available to *Western Gas*. The summary is the work of Edward McKeever of the West Texas Gas Co.—EDITOR.

By EDWARD MCKEEVER

West Texas Gas Company
Lubbock, Texas

THE people as a nation, have become metal-conscious. Only a few years ago steamships, trains, tanks, and even pipe lines were made of wood. Steel has, in many cases, completely supplanted wood in modern mechanical development. Bolts, rivets, and forge welding were at first employed in the fabrication of metal parts. A need arose for an easier and more economical method of fabrication and fusion welding was developed, which is gradually displacing the ancient method.

The welding industry, which is rated the seventh largest industry in the United States today, has taken a tremendous step forward in the oil and gas business. Pipe lines are joined together and repaired by welding. Oil field tools are hard surfaced and have proven to last five times as long as they would otherwise. Steel derricks and rigs will be welded together in the future by one large oil company. In the gas business, taps for new service lines, meter cases and castings, meter regulator installations and headers, boiler fronts for burners, steel and cast iron flanges are cut, welded and brazed.

There are five types of welding, namely: 1. Forge. 2. Thermit. 3. Resistance. 4. Gas. 5. Arc. For the sake of clarity, however, the various applications of welding can be considered under only four headings:

A. *Fusion Welding*—welding parts with rod of composition similar to the base metal, involving also melting of the base metal. This is the largest type, since practically every ferrous and nonferrous metal is concerned.

B. *Bronze Welding*—using bronze welding rod for joining metals of higher melting point than the bronze rod. This method is consequently more restricted in application than fusion welding.

C. *Bronze Surfacing*—essentially the addition of bronze weld to the surface of parts of bronze welding.

D. *Hard Facing*—the welding of special alloys to the surfaces or edges of parts requiring special protection against wear.

Welding is compared to medicine. A doctor must know what is the trouble with his patient before he treats him, and so, too, a welder must know the particular material which he is to fix, the proper rod to use, and the right temperature of his torch, in order to make a good weld.

Low Carbon Steel in the form of sheets, plates, shapes, pipe and castings: Sheet steel is commonly welded with a very low carbon steel, or so-called Norway iron welding rod. For steel plate and pipe, the rod generally preferred is one containing about 0.15 per cent carbon and having certain metallic elements that deoxidize the weld metal during the welding operation, insuring the carbon content in the weld being about the same as that of the base metal. With such a rod it is possible to secure 100 per cent strength in single V welds, slightly reinforced, in steel plate and pipe—at least 10,000 lbs. per sq. in. stronger than welds made with Norway rod.

The so-called 18.8 *stainless steel* can be best welded with a rod containing carbon below 0.07 per cent, because carbon precipitation, which lowers resistance to corrosion, is decreased to a small amount.

Oxidation of Chromium—in stainless steel, both in the puddle and next to the weld, must be guarded against by using suitable flux, made into a thin paste and painted on all surfaces of the base metal that are raised to a red heat during welding.

Many of the so-called low alloy steels—molybdenum, vanadium, chrome-molybdenum, chrome-vanadium, etc., are readily welded together with a rod that results in a weld having the proper alloying elements.

A satisfactory practice of welding *cast iron* is fusion welding with cast iron welding rod and flux.

Fusion welding of *copper* is successfully accomplished if a deoxidized grade of copper base metal and welding rod is used.

Brass and bronze are best suited to an excess oxygen flame, the degree of the excess depending on the percentage of lead and tin.

Aluminum welding rods, containing 5 per cent silicon, make it possible to weld aluminum castings with practically the

(Continued on Page 50)

Experience With Gas Flood Lighting

● **J. FRANK JONES, vice-president and sales manager, Battle Creek Gas Co., Battle Creek, Mich.; addressing Midwest Regional Gas Sales Conference, Chicago, February 14-15, 1935; topic "What About Flood Lighting?"—(Abstract by WESTERN GAS).**

WHEN the Battle Creek Gas Co.'s attention was first brought to the Humphrey Super Gas Arc Lamp the possibility was seen of substantial revenue increases as well as a favorable psychological effect these lighting installations would have on customers. These new lamps burn between 60 and 70 cubic feet of 550 B.t.u. gas per hour. In an all-night filling station a minimum of 10,000 cubic feet per lamp per month is consumed; this is equal to a small house heating job, but it is considered that gas for lighting may be sold at a rate at least 40 per cent higher than that necessary to procure house heating business.

Following the first few installations in Battle Creek, the company was besieged with inquiries, indicating that better illumination can easily be sold. "Make your building the brightest spot in town" was the slogan for the Battle Creek promotion. While direct sales work was relied upon principally, a letter was sent out to all filling stations enclosing literature describing the lamps, and this resulted in numerous inquiries.

Customers liked the new lights, even though their light bills were slightly higher, because of the considerable increase in illumination; filling station operators, where the gas lights were installed, enjoyed increased business.

The following plan has been used to get the lamps in use. The customer pays all installation charges for piping, wiring, etc., the company furnishes the lamps complete and maintains them for as long as they are in use. Gas is sold at $1.00 per M c.f. which allows a sufficient margin to help amortize the cost and take care of service and maintenance.

Twenty-five lamps have been installed, in filling stations, auto sales room, grocery, oil company, coal office and gas office. These 25 lamps are accounted for in 12 installations, through which the company is selling from 120,000 to 150,000 cubic feet per month, the revenue coming principally from about 12 lamps.

On the basis of operation varying from 76 to 131 days, the following statistics have been developed:

Globes replaced	11
Mantles replaced	107
Number of service calls made	161
Average cu. ft. per day per lamp	232
Average life of mantle (hours)	101

It is felt that, although the maintenance costs have been high, the lamp has definite possibilities which warrant major effort for its installation. From the Battle Creek Gas Co. experience it appears that the gross revenues received in two years on the average installation will equal the total investment involved.

The first step for any company to take in initiating its sales program on gas lighting is to make an installation in its own building. From that installation experience will be gathered and many prospects will result.

A point stressed by the Battle Creek company is that good judgment should be used in placing the lamps; an analysis should be made of the prospect's business to determine whether he can afford to pay for better illumination.

The "Heat-Hour": Proposed Energy Unit

● **DONALD HENRY, Stone and Webster Engineering Corp., addressing A.G.A. Southern-Southwestern Regional Gas Sales Conference, Dallas, Texas, February 20-23, 1935. —(Abstract by WESTERN GAS).**

HEAT is the gas utilities' only tangible commodity, packed in concentrated form, readily usable and convertible, always cleanly, and delivered where wanted in any quantity and at any time. Gas heat should not be difficult to sell. It is as hot as electric heat, just as convenient and cleanly, and considerably cheaper. Perhaps the reason the gas industry is losing sales to electricity is because it is trying to sell not heat, but cubic feet, conversion ratios, heating value standards and etceteras.

The heating customer is concerned with buying energy, and wants to know and compare its unit cost in the various available forms. He cannot evaluate or visualize such a varying standard as the cubic foot of gas—it has no more significance to him than the voltage frequency of his electric service. Even a trained engineer cannot tell the value of a cubic foot of gas until he ascertains its heat content. What the gas industry needs is a convenient, definite and unchanging unit of heat.

With this thought in mind, numerous gas companies in this country and Europe have adopted the therm—100,000 British thermal units—as the unit of gas service value. One hundred thousand of anything is too big a figure for the customer to interpret; moreover, the cost of a therm is considerably above the cost of a kilowatt-hour, and as the customer is familiar with the latter the therm seems more expensive and suffers in comparison.

The kilowatt-hour is equivalent to 3,412 British thermal units. It is suggested that, to put gas energy on a comparable footing with the familiar electric unit, the gas industry adopt a unit of 3,415 British thermal units, and call it the *Heat-Hour*.

The salesman can then go into a home and describe an appliance using, for in-

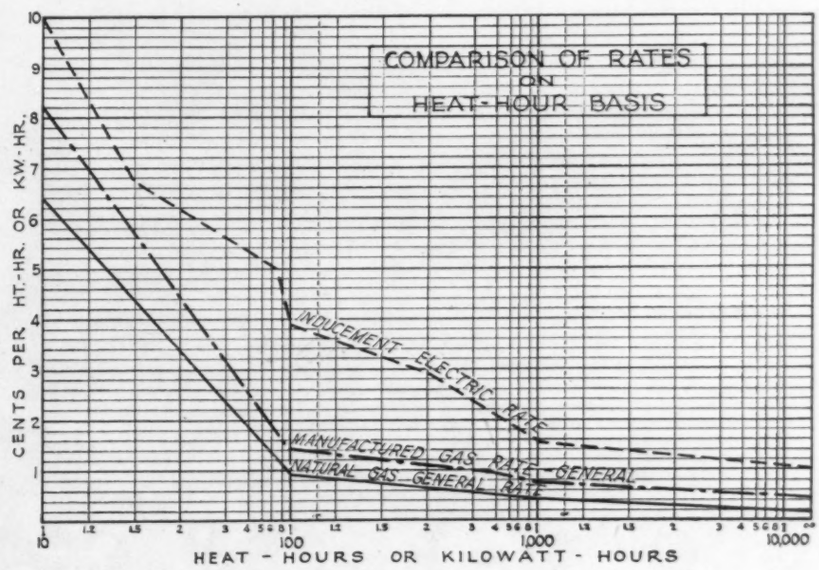
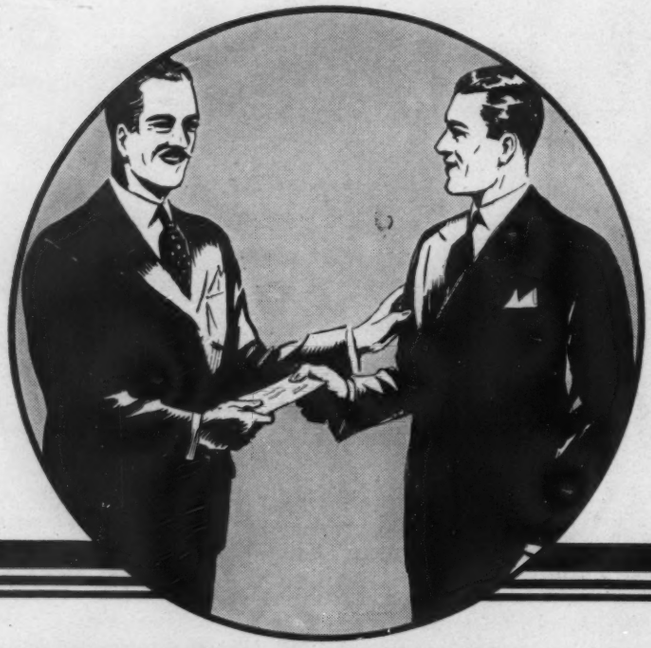
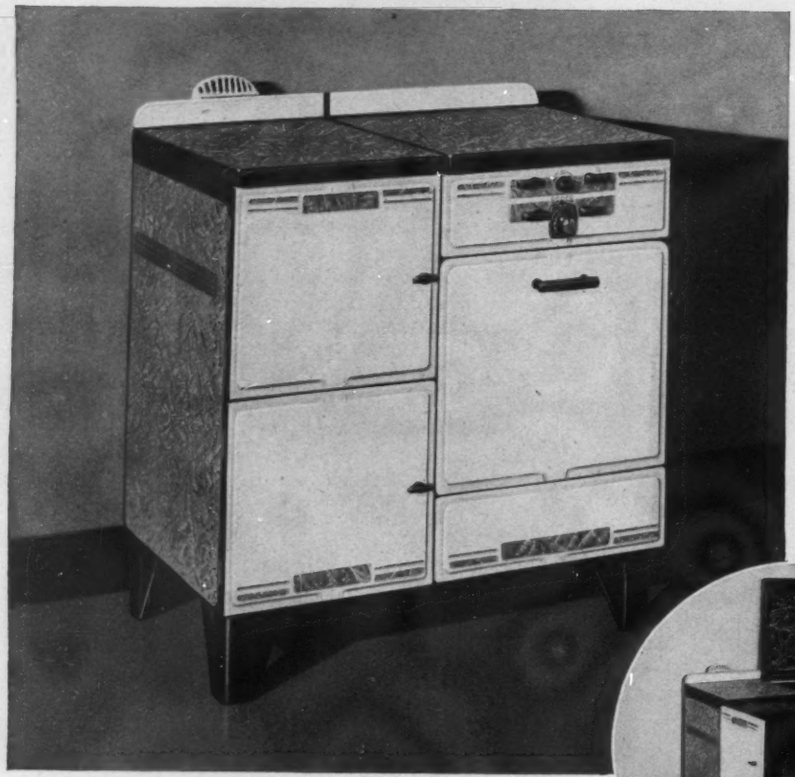

COMPARISON OF RATES ON HEAT-HOUR BASIS
CENTS PER HT.-HR. OR KW.-HR.
INDUCEMENT - ELECTRIC RATE
MANUFACTURED GAS RATE - GENERAL
NATURAL GAS GENERAL RATE
HEAT - HOURS OR KILOWATT - HOURS

FIG. 1.

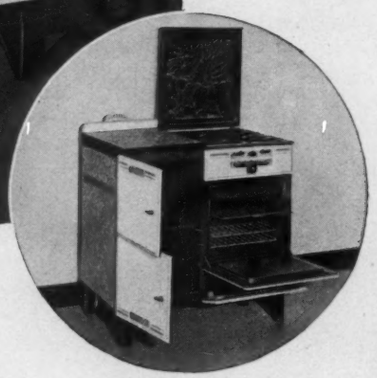


Win



Here's the range . . .

Competition will be TOUGH in this nation-wide prize contest —to be a winner, you MUST have the proper tools. Here's the ideal campaign range—a new Roper model, fresh from the designer's desk—with all the features to make it a truly *modern* gas range—ready for immediate delivery—and built purposely as an advertising leader for volume sales.



No. 14 Series

FIFTIETH ANNIVERSARY SPECIAL

Three smart new color trims . . . oven heat control . . . insulated duplex oven . . . new broiler pan and grid . . . one-way "EconoSpeed" burners and rotary disc valves . . . "Insta-Flame" automatic top lighting . . . "Air-Stream" cooking top . . . new style, connected, "Air-Stream" bowls and utensil supports . . . double-seal doors . . . new hardware, new legs . . . two storage compartments with swing doors . . . attractive valve handle grouping . . . porcelain enameled throughout.

ROPER

GAS RANGES

Order samples of this campaign range right now—get a start on competition. Even though your company may not be participating in the National Prize Campaign . . . get this new series on your floor and watch sales pep up!

GEO. D. ROPER CORPORATION

your A.G.A. *divisional prize*

and here's the plan . . .

With the RIGHT range leader, you need a plan to build your own campaign around. And here's the answer—a plan that's complete from "soup to nuts".

Newspaper ads packed with human interest . . . consumer folders . . . consumer letters and special letterheads . . . suggested radio announcements . . . modern, colorful display material . . . new Baby Roper banks . . . sales manuals . . . booklets for selling ammunition . . . inspirational talks and skits . . . and TWO EXTRA CONTESTS sponsored by Roper for salesmen and display men.

If you didn't receive our 1935 Sales Plan... Send the Coupon!

Due to changes throughout industry, inaccuracies in mailing lists, etc., it might be possible that you did not receive a copy of the 1935 Roper Sales Portfolio. If you didn't get it, or if you want details on the No. 14 range series, fill in the coupon NOW and mail it to us. Your copy will be in the return mail!

ROCKFORD, ILL.

W-3-35

GEO. D. ROPER CORPORATION
Rockford, Illinois.

Gentlemen:

Please send me BY RETURN MAIL a copy of your 1935 Sales Plan. ☐
Send me catalogue page and prices of your No. 14 Series. ☐

Individual..... Title.....

Company Name.....

Street.....City and State.....

stance, 300 heat-hours per month, the heat-hour being "practically the same but slightly larger than the kilowatt-hour," and costing only 0.7c while the kilowatt-hour costs 2.5c. There will be no necessity for explanations or computations that confuse the prospect.

A conversion of present cubic foot gas rates directly into heat-hour rates will give rise to complicated fractions that may need simplifying. This is very easily done, as shown by the following examples.

Comparison of Heat-Hour and cubic foot rates

NATURAL GAS

1,000 B.t.u. per cu. ft.
1 Heat-hour = 3,415 B.t.u.
1 M c.f. = 292.8257687 Heat Hours

Cubic Foot Rate

	Service Charge	$.60
First	1000 cu. ft.	1.10 per M c.f.
Next	2000 cu. ft.	1.00 per M c.f.
Next	17000 cu. ft.	.60 per M c.f.
Over	20000 cu. ft.	.55 per M c.f.

Heat-Hour Rate

	Service Charge	$.60
First	292.83 ht.-hrs.	.0037565 per ht.-hr.
Next	585.65 ht.-hrs.	.0034149 per ht.-hr.
Next	4978.04 ht.-hrs.	.0020489 per ht.-hr.
Over	5856.52 ht.-hrs.	.0018182 per ht.-hr.

Converted to practical form the above heat-hour rate becomes:

	Service Charge—per meter month	$.60
First	300 heat-hours	.00375 per ht.-hr.
Next	600 heat-hours	.00340 per ht.-hr.
Next	5100 heat-hours	.00200 per ht.-hr.
Over	6000 heat-hours	.00185 per ht.-hr.

MANUFACTURED GAS

575 B.t.u. per cu. ft.
1 Heat-Hour = 3.415 B.t.u.
1 M c.f. = 168.37481 Heat-Hours

Cubic Foot Rate

	Service Charge	$.75
First	2000 cu. ft.	1.25 per M c.f.
Next	3000 cu. ft.	1.10 per M c.f.
Next	15000 cu. ft.	1.00 per M c.f.
Over	20000 cu. ft.	.80 per M c.f.

Heat-Hour Rate

	Service Charge	$.75
First	336.75 ht.-hr.	.007424 per ht.-hr.
Next	505.12 ht.-hr.	.006533 per ht.-hr.
Next	2525.62 ht.-hr.	.005939 per ht.-hr.
Over	3367.49 ht.-hr.	.004751 per ht.-hr.

Practically this becomes:

	Service Charge—per meter per month	$.75
First	300 heat-hours	.0075 per ht.-hr.
Next	500 heat-hours	.0065 per ht.-hr.
Next	2200 heat-hours	.0060 per ht.-hr.
Over	3000 heat-hours	.0045 per ht.-hr.

The lowest competing electric rate in the southern and southwestern territory is:

First	15 kw-hrs. or less	$1.00
Next	50 kw-hrs.	.0450 per kw-hr.
Next	135 kw-hrs.	.0200 per kw-hr.
Next	500 kw-hrs.	.0125 per kw-hr.
Over	700 kw-hrs.	.0100 per kw-hr.

Fig. 1 shows visually the relation of these practical heat-hour gas rates and the lowest available electric rates in the territory.

Gaining and Holding Heating Customers

● **V. L. BLACK, director heating utilization sales, Equitable Gas Co., Pittsburgh, Pa.; addressing Eastern Natural Gas Sales Conference, Pittsburgh, February 28 to March 1, 1935—(Abstract by WESTERN GAS).**

WITH the present status of fuel competition, there is no assurance that former or newly acquired house heating customers will remain gas consumers. In recent years the domestic load has decreased faster than new load can be obtained, and a study of monthly curve characteristics will show that this is due to loss of house heating customers. In the case of the Equitable Gas Co. the trend became so alarming that a definite course of action to arrest the decline of the heating load was put into effect.

All heating customers were located by securing from the accounting department a list of those customers whose January gas bill exceeded predetermined minimum considered to place them in this class. This list was approximately half the number estimated eight years previously.

The service policy was then changed radically to give free service on all gas appliances; a business reply postcard was sent to all customers requesting opportunity to supply this service, and service men were instructed to make necessary adjustments and interview the customer to obtain his attitude.

In all older metropolitan areas where natural gas has been available for years, many antiquated and obsolete heating systems are in operation and the Pittsburgh check-up revealed many conditions where repair work was urgently needed. Steam boilers were found without pressure controls or with controls which had failed years before. Hot water systems were found with clogged overflows from tanks or pressure valves. Rotted rubber hose connections on small appliances and dirty and inadequate service pilots on major equipment were encountered on many older installations. Rusted through pipe and partially stuffed up flues were common in every section as were also boiler and burner sections heavily coated with carbon. The company's policy was to remedy such conditions immediately.

About 80 per cent of the gas heating users were interviewed and minor adjustments made; major service was performed for about 10 per cent. Some 12½ per cent of the heating customers had either already changed to some other fuel or were considering immediate action. Of these, 30 per cent were saved by sales and service efforts; 8 per cent were lost; the rest are still wavering and require constant attention. This activity including labor, transportation, and material furnished at no charge, cost an average of $4.60 per year per heating customer. It resulted in protection against a large loss of revenue, and establishment of very friendly relations with a large number of the most important customers.

As another direct result more than $25,000 worth of gas heating equipment, with a potential load of 18,000,000 cubic feet annually, was sold from these contacts with customers. About 25 per cent of this load was regained by installing modern equipment where customers had changed to other fuels, and 75 per cent represented gas replacements.

In the past the measure of success of a house heating activity was the number of installations secured. The yardstick that must now be used is not how many are sold but how many can be retained as permanent. The unofficial slogan of the Equitable Gas Co. sales force is: *Sell them right, install them right,* and *keep them sold.*

The 1934 house heating sales campaign in the Pittsburgh area featured a trial demonstration plan on automatic gas conversion burners. The activity was highly successful; it was recognized, however, that selling on the rental basis did not remove the competitive fuel threat, but set up a special need for keeping these new installations sold. The first was an inspection-service call by the sales department and major service work, where required, by the service department. The hardest part of the resales task was to keep customers satisfied with their heating costs. To assist salesmen in justifying heating bills they were supplied with comparative degree day tables which were kept up to date daily. A series of four personal letters also was sent to each customer, containing practical suggestions for keeping heating costs at a minimum, informing on how to figure gas heating costs, etc.

Indicating the effectiveness of the 1934 sales and load retention program, is the fact that with 70 per cent of the heating season passed, the reclaims have amounted to but 6.2 per cent, meaning that 93.8 per cent of the new burner customers are still using gas for heating. Service costs on the new installations, for labor, transportation, and material, including cost of service rendered to other gas appliances in the homes, amounted to approximately 92c per burner per month or $6.44 per unit for the seven months heating season. If the time of the sales group is included, the monthly cost per burner is $1.49 and the cost of protection for the entire heating season is $10.43. Against this can be balanced the average revenue from each new customer of $117.50 per year.

THESE ASTOUNDING FACTS

were revealed in a survey used in connection with the Better Housing Program.

BETTER HOUSING PROGRAM

Twenty-six percent of Home Owners expect to modernize their basements, and *twenty-nine* percent expect to buy new Heating Plants.

Think of this! On a National basis, actually several millions of homes expect to buy new furnaces, or modernize their old heating systems!

Imagine! *Twenty-nine per cent* of present home owners are prospects for new heating equipment. No other line of domestic equipment has such a high percentage of potential purchasers!

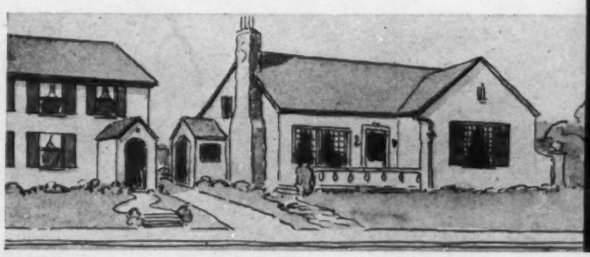
Sales organizations alert to this opportunity will take advantage of all the publicity now being given this Program. They will want to sell all the advantages offered by Surface Combustion's HEATMASTER furnaces and conversion burners —all the advantages that are truly modern.

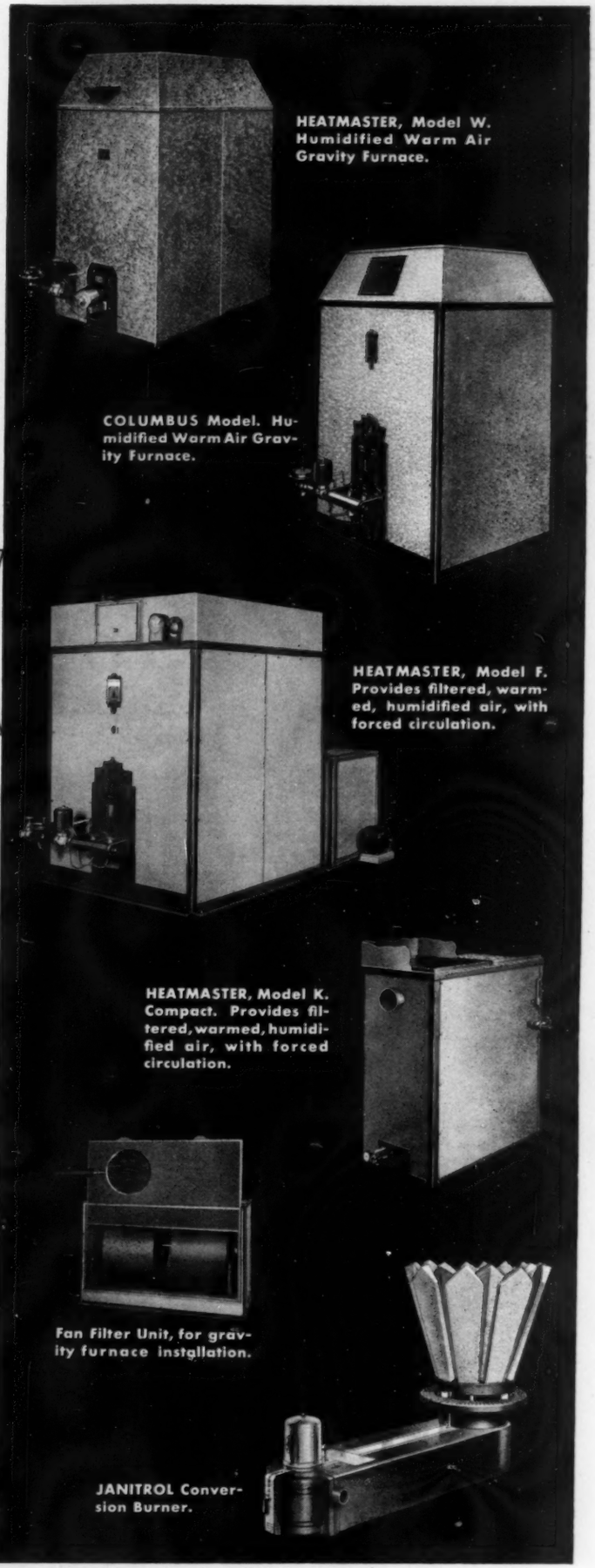
In addition, SC offers engineering, personnel, advertising, and a broad background of experience gained from more than one hundred thousand installations of SC house heating equipment.

Capitalize on all these factors and all these advantages. *Get your share of the twenty-nine per cent!*

Surface Combustion

TOLEDO, OHIO Sales and Engineering Service in Principal Cities





HEATMASTER, Model W. Humidified Warm Air Gravity Furnace.

COLUMBUS Model. Humidified Warm Air Gravity Furnace.

HEATMASTER, Model F. Provides filtered, warmed, humidified air, with forced circulation.

HEATMASTER, Model K. Compact. Provides filtered, warmed, humidified air, with forced circulation.

Fan Filter Unit, for gravity furnace installation.

JANITROL Conversion Burner.

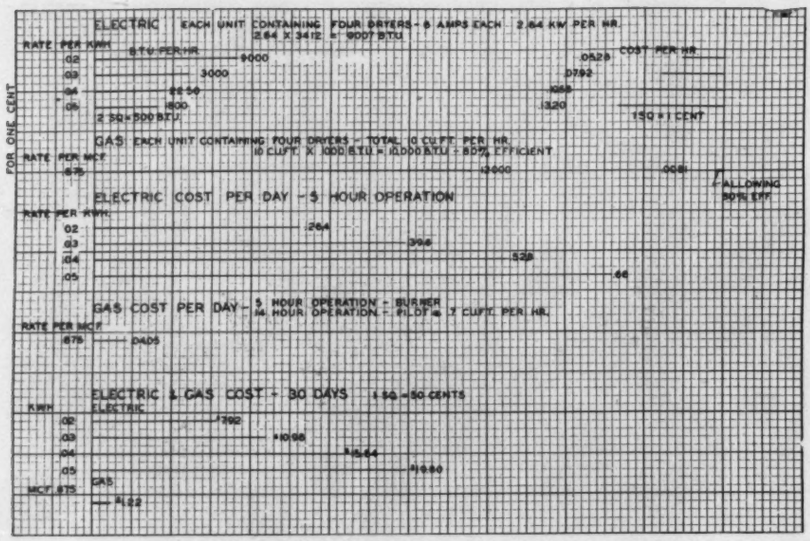


FIG. 1. Cost and heat chart for gas and electric hair dryers.

Introducing Gas Hair Dryers in Texas

● C. K. PATTON, Dallas Gas Co.; addressing A. G. A. Southern-Southwestern Regional Gas Sales Conferences, Dallas, Texas, February 20-22, 1935—(Abstract by WESTERN GAS):

SEVERAL years ago gas hair dryers were first introduced to the hair dressing field, but were not suited for the work and proved unsatisfactory. Since this time equipment manufacturers have been improving these appliances to the point where a number of them now on the market are most excellent pieces of equipment, several makes bearing the A. G. A. Testing Laboratory approval seal.

C. K. Patton

In addition to the gas load that may be developed by the extensive use of these dryers, a real benefit will accrue to the industry as a result of the introduction of gas, as a better and more economical fuel, to the women patrons of the hair dressing establishments.

Promotion of this type of equipment was undertaken by the Dallas Gas Co. by contacting the various jobbers in the city and, since considerable interest was evident, sales activities were coordinated under the direction of a special representative. All hair dressers in the city were contacted, over a period of eight weeks, and the effort culminated by a two-day display of all known makes of gas dryers, in the company's auditorium.

As a result of this effort, 87 gas hair dryer units were sold, replacing existing electric installations; inasmuch as the gas unit consisted in every instance of at least four helmets, the electric replacement was actually at least 348 individual dryers. It is felt that the gas dryer is now successfully entrenched in Dallas and will gain further acceptance.

Fig. 1 shows the cost and heat chart, which constituted the backbone of the drive and was supplied to all jobber salesmen. Economy of the gas equipment is very apparent from the data given in this chart.

W. M. Gaylord, Gas Dept. Supt.

W. M. Gaylord has been named superintendent of the gas department of the Springfield (Mo.) Gas and Electric Co., to succeed E. F. Hannah, recently deceased, as announced by William H. Swift, vice-president and general manager of the company.

Mr. Gaylord has been industrial gas engineer for the company since 1931 when change-over to natural gas service was made. Porter W. Martin, assistant superintendent of the gas department, has been promoted to fill the vacancy caused by Mr. Gaylord's appointment. He was with the Consumers Gas Co. of Hot Springs, Ark., before coming to the Springfield Gas and Electric Co. in 1934.

Annual March Campaign Called Off

The annual March campaign on gas ranges, sponsored by the Gas Appliance Society of Northern California, has been called off because of impending labor troubles in local factories which might interfere with deliveries to dealers.

Unit Heater Sales in The Chicago Area

● SMITHERS MERRILL, Peoples Gas Light and Coke Co., Chicago, Illinois; addressing Eastern Regional Natural Gas Sales Conference, Pittsburgh, Pa., February 28 to March 1, 1935—(Abstract by WESTERN GAS).

DURING the house heating campaign in Chicago a wide field for unit heater sales developed among commercial and industrial customers. An analysis of heating requirements in these applications developed the following deficiencies and weaknesses in the prospects' present heating methods.

1. A need for bringing up heat quickly in mornings.
2. The heating of new additions to buildings.
3. The need for a booster when the central heating plant was off.
4. The location of heating equipment; usually in the center of the small store or office, taking up valuable space.
5. Frost on windows during winter.
6. The need for a night standby during winter.
7. Plants operating on five-day week. Offices and other portions needing heat when the main plant was closed.
8. Buildings with high ceilings. The need of a circulating medium to utilize warm air.
9. Process work. Need of heating a given area.
10. High cost of firing and attendance of boilers.
11. Expense incurred in early firing of boiler to bring up heat.
12. Partially occupied plants needing a unit system separate from the central plant formerly used.
13. Overloaded boilers and heating plants.
14. Excessive cost in overheating losses, line losses, idling losses, low firing losses as in daily routine and spring and fall months.
15. Cost accompanying frequent purchases of fuel.
16. Fluctuating prices of fuels.
17. Dust, dirt, and resultant depreciation of merchandise.
18. Smudge or film on show cases or windows.
19. Insufficient heat due to the fear of overheating and the resultant spoilage of perishable goods.

It was considered that the unit heater provided the following advantages with which to compare gas service to that of competition, and justify the proposed domestic gas rate:

1. Safety.
2. Control (heat at the desired temperature to meet the requirements of a particular business).
3. Added floor space (returning space for profitable utilization).
4. Flexibility: (a) Single or multiple units. (b) Heat in one part of building independent of other parts.

THE HOYT LINE
EVERDUR TANKS
THE STRENGTH OF STEEL THE DURABILITY OF COPPER
PLENTY OF WATER
ANYTIME FOR WASHING DISHES BATH
Hoyt
"... see that tank! It's EVERDUR"

Window display of Hoyt Automatic Water Heaters, manufactured by Hoyt Heater Company, Oakland, California. Note the reference to Everdur Tanks and the cutaway view of an all-welded tank of this rustless metal.

No wonder so many Gas Companies recommend tanks of rust-proof Everdur

CHECK THESE 5 REASONS

✓ They give satisfactory service indefinitely . . . cost the buyer far less in the long run.

✓ They banish rust troubles...require less servicing.

✓ They provide dependable gas consumption, because rust cannot interfere with their performance.

✓ They are readily available . . . leading manufacturers of automatic gas water heaters equip rust-proof models with tanks of Everdur.

✓ They are reasonably priced, because Everdur lends itself to volume production of welded tanks.

For these significant reasons, more and more utilities are pushing the sale of water heaters with *rust-proof Everdur Tanks.* This special Anaconda metal, composed almost entirely of copper, is widely favored by leading manufacturers for tanks of exceptional durability . . . because it combines the corrosion-resistance of copper with the strength and welding properties of steel! May we supply additional data and the list of automatic gas water heater manufacturers using Everdur Tanks?

ANACONDA
from mine to consumer

EVERDUR METAL

"Everdur" is a registered trade-mark identifying products of The American Brass Company made from alloys of copper, silicon and other elements.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
In Los Angeles: 411 West Fifth Street *In San Francisco:* 235 Montgomery Street

EVERDUR METAL *for* TANKS

5. Economy (elimination of various firing and attendance expenses).

6. Automatic heat (reduction in labor cost).

7. Forced ventilation.

8. Cleanliness (elimination of soot, dust, smudge).

9. Attractiveness (appearance does not rapidly depreciate with use).

10. Auxiliary heat (to meet particular conditions).

11. Fan speeds (to accommodate special conditions).

12. Sizes (to meet varying requirements).

13. An installation that could be made without serious inconvenience or time lost by plant, store, or employees.

14. Circulated heat (winter and summer—elimination of air stratification).

After due consideration of promotional requirements, the unit heater was placed on a trial and rental plan whereby the customer could rent it with option to purchase any time during the first year.

A careful investigation brought to attention the following requirements for unit heater installations:

That low-speed fans gave better satisfaction in the smaller applications.

That the direction of fan should not be toward fruits, vegetables, or perishable goods.

That the thermostat should be installed where it is not easily accessible to the public.

That the condition of cold floors could be overcome by the turning of the first and second louvres in the floor direction, or at times by the sale of a radiator or circulating heater.

That the installation should be made in such a manner that the heater could be turned without being taken down.

That the height from floor on average installations should be not less than 7 feet.

That the venting distance should not exceed 12 feet of horizontal run, and where it does the use of exhaust fans or other mechanical methods assist in overcoming venting difficulties.

Contractor dealers, from its beginning, played an important part in this activity. They were carefully given facts on the sales possibilities of unit heaters. Their personal acquaintance with customers through previous work, and their knowledge of these customers' systems, placed them in a position to be of material help.

Since the date unit heaters were included in the general plans of the house heating activity 3,429 have been sold and installed. They cover a wide and varied list of applications and are rendering a satisfactory service. In doing so the unit heater is bringing to the attention of the public many new methods through which gas provides a solution for unusual heating problems.

Holding the Commercial Cooking Field

● **L. A. DUBBERKE, manager hotel and restaurant division, Milwaukee Gas Light Co.; addressing Midwest Regional Gas Sales Conference, Chicago, February 14-15, 1935; topic "Cooking for Profit"—(Abstract by WESTERN GAS).**

GAS utilities must become more aggressive in the protection as well as the development of the commercial cooking load. The real competition today is not the oil man nor the electric man, but rather the inefficient, antiquated, gas cooking equipment. It is essential to thoroughly inspect all the cooking equipment of commercial customers, analyze bills, analyze cooking requirements, and wholeheartedly endeavor to replace that equipment which is wasteful in food, time and fuel. Sub-meters should be set to determine the gas consumption of each piece of equipment, oven and top operation separately. Hours of operation should be studied. Secure the number of meals served per month and determine the cost per meal. Broiling operation should be carefully noted to see whether cost can be reduced through installation of a salamander broiler or small off-peak broiler. Specialized cooking equipment such as deep fat fryers, stock kettles, etc., should be recommended where economy can be effected through their use. Coffee urns and steam tables should be equipped with thermostats.

Trial installations should be made where serious fuel competition prevails or where fuel other than gas is now being used. Extend liberal terms where necessary. Urge customers to burn as little gas as possible; insist that the chef crowd the top and oven of the range during peak hours. Insist that the cook turn down the burners after the food has started to boil. In most any hotel kitchen, invariably it will be found that one or two closed top ranges are going all day without need. A top can be heated, ready for cooking in about 12 minutes. Two open top burners included somewhere in a battery of hotel ranges will save several thousand cubic feet annually.

Modern gas-burning equipment installed in the commercial kitchens will shut out competitive fuel once and for all. Installations of modern gas-burning equipment properly selected will not only improve the food and service but will also reduce the customers' bills, improve relations, and give the chef a cooler and more convenient kitchen. Better than 90 per cent of the gas-burning equipment in the commercial kitchens comes under the classification of obsolete equipment, which should be quickly replaced.

With reference to maintenance of commercial cooking equipment, it is vitally important that periodic inspections be made frequently. Heat controls should be checked at least once every three months. With proper maintenance service, it is possible to show some savings even with the old equipment.

Controlling Appliance Servicing

● **MILTON S. BOLINGER, service supervisor, Arkansas Natural Gas Corp., Shreveport, La.; addressing A.G.A. Southern-Southwestern Regional Gas Sales Conferences, Dallas, Texas, February 20-22, 1935—(Abstract by WESTERN GAS):**

THE value of an efficient service department, capable of correctly adjusting all gas-burning equipment, and operated without cost to the consumer, has been well established. However, limitations must be placed on the amount of work done.

Repairing old equipment without exercising judgment may develop costs which can make gratuitous service economically impractical. There is no time in the life of an appliance when it cannot be repaired, and many consumers will choose to recondition antiquated equipment when it is more practical to replace with new and avoid the considerable amount of labor and trouble in procuring and installing parts.

The most prevalent service calls result from primary air stoppage, causing fumes and sooting. These may be reduced by consumer education in care and cleaning of appliances and recognition of proper flame characteristics. This education is greatly assisted by a sales department properly instructed in servicing problems. If merchandise is not oversold, and accurate instruction in the care and operation of new equipment is given, the cost of servicing this equipment will be materially reduced. Salesmen, in their routine calls and selling, can accomplish, in addition, a systematic survey and inspection of existing equipment and an advisory service to customer and service department.

Service men in the writer's company are constantly provided with practical instructions and theoretical education on all types of appliances. They are instructed particularly to observe the following:

First, that gas input on all appliances is correct.

Second, that proper air adjustment is maintained at the burner; if a customer's complaint is due to dirty burners he is shown how to clean them and asked to report if further trouble is encountered; the service man does not clean appliances.

Third, that vents are correctly installed and working properly; the service man advises the customer how to remedy

Mr. GAS MAN...*Here Is Your Answer!!*

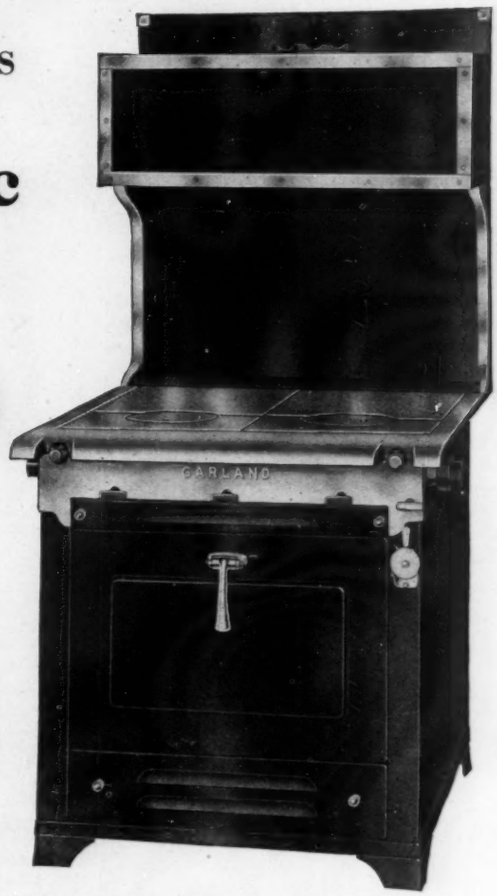
TO ITS MANY OTHER SUPERIOR FEATURES
WE NOW HAVE ADDED

Fully Automatic Control

TO THE NEW

GARLAND

Heavy Duty Gas Range



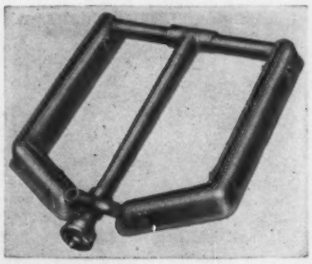
No. 49-28 Garland Fully Automatic Heavy Duty Range with double-deck high shelf.

Here at last is a range so fully automatic, so precisely controlled, that it compels economy.

Every one of the amazing new, and improved old, features of this 1935 Fully Automatic Garland Heavy Duty Gas Range has been consummated to combine, in one supreme cooking unit, the great selling points you have demanded . . . greater operating efficiency and greater operating economy.

Keeping pace with this demand for greater efficiency and lower costs in the preparation of foods, we developed this new unit as our contribution to the solution of this ever important problem.

The new Garland Fully Automatic Heavy Duty Range cooking top is equipped with Robertshaw Heat Controls which accurately and positively control the gas used on top of the range where 75% of the cooking is done. The temperature required is pre-determined, the controls are set . . . and . . . the gas consumption is automatically controlled throughout the entire working day. No gas wasted. Set the dials and the controls do the rest.



The Fully Automatic Garland oven burner, with new shield for increasing efficiency and economy.

The oven burner, too, has been greatly improved for economy. A scientifically designed burner and shield reduces the amount of secondary air, thus increasing the burner efficiency to a remarkable degree. The oven is thickly insulated, and, of course, automatically controlled. Truly, we believe this new Garland Fully Automatic Heavy Duty Range to be the best unit we have ever produced in our many years of making Heavy Duty Equipment. Write us for complete details of these new, fully automatic ranges.

Gas is the ideal fuel and at its best when used with Garland Heavy Duty appliances

DETROIT-MICHIGAN STOVE CO.

Detroit, Michigan

an improper vent and recommends someone to do the work.

Fourth, that the customer is thoroughly and correctly instructed in operation and capacities of his appliances.

Operating experience indicates that the consumer has learned to respect this service, and avail himself of it to a degree that brings about satisfactory appliance operation. Under this scheme it is not necessary for service men to inspect all appliances in a periodic and routine manner; this is only done in the case of house heating equipment, at the commencement of the heating season.

Mid-West Gas Association Program Announced

PLANS for the 30th annual convention of the Mid-West Gas Association, to be held at the Hotel Fontenelle, Omaha, Neb., April 15-17, are rapidly being completed, according to R. B. Searing, secretary-treasurer of the association.

Frank H. Brooks, first vice-president of the association, is in charge of program arrangements. The annual Stag Banquet, which will be a big feature of the convention, will be held on the evening of April 16.

A tentative program of subjects to be covered in the business sessions follows:

The Natural Gas Industry—Its Progress and Trend.

The Manufacturer, Utility, and Dealer Relations.

Modern Improvement in Customer Appliances and Work of the A.G.A. Laboratories.

The Mid-West Gas School and Conference.

Use of Natural Gas in Omaha to Carburet Blue Water Gas to 550 B.T.U.—by C. D. Robison, Metropolitan Utilities District, Omaha, Neb.

Use of Natural Gas in Minneapolis to Carburet Blue Water Gas to 800 B.T.U.—by Lester J. Eck, Minneapolis Gas Light Co., Minneapolis, Minn.

Conversion of Customer Appliances for Higher B.T.U. Gas—by W. E. Steinwedell, The Gas Machine Co., Cleveland, Ohio.

Characteristics of Natural Gas vs. Manufactured Gas as Relating to Leakage and other Problems of Distribution.

Cooperative Range Campaigns: (a) Domestic, (b) Hotel and Restaurant, (c) Modernizing the Kitchen.

Flood Lighting.

Air Conditioning.

Refrigeration Sales Plans.

Househeating:

(a) Resume of Program of A.G.A. and Principles of Mass Selling—by C. A. Nash, United Light & Power Co., Davenport, Iowa.

(b) Sales Plans.

(c) Practical problems of installation and control.

The Gas Industry—by Alexander Forward.

Closing Remarks by the President—C. T. Williams, Sioux City Gas and Electric Co., Sioux City, Iowa.

Hotel, Restaurant Symposium, Chicago, March 22

A HOTEL and restaurant symposium to be conducted under the auspices of the hotel and restaurant committee, Industrial Gas Section, American Gas Association, will be held March 22 at the Palmer House, Chicago, Ill. T. J. Gallagher of The Peoples Gas Light & Coke Co., Chicago, is chairman of the committee.

No formal presentation of papers will be made at the meeting, but a general discussion will be participated in by all delegates. Following is a program of the subjects which will be presented for discussion:

Dealer Cooperation—discussion led by I. S. Anoff, president, Albert Pick Co.

Customer Relations—led by Ralph L. Manier, Syracuse Lighting Co.

Hotel and Restaurant Sales Promotion from the Manufacturer's Viewpoint—led by C. H. French, Standard Gas Equipment Corp; and W. J. Hill, Detroit-Michigan Stove Co.

Advertising in the Hotel and Restaurant Field—led by Fenton Kelsey, president, Fenton Kelsey Co.

Modern Gas Appliances for Volume Baking and Cooking—led by Robert H. Staniford, Brooklyn Union Gas Co.

Competitive Fuels—led by C. George Segeler, American Gas Association.

Servicing Hotel and Restaurant Equipment—led by Roy E. Wright, Cambridge Gas Light Co.

Large Increases in 1934 Peoples Gas Sales Recorded

THE annual stockholders' report issued in February by The Peoples Gas Light and Coke Co. reveals a considerable upswing in gas sales for the year 1934 which is said by the management of the company to result for the major part from a more aggressive sales program launched by the organization.

Total gas sales for the year 1934 for the company and its subsidiaries were 449,174,690 therms as compared with the sale of 279,277,938 therms in 1933. This represents an increase in therms amounting to 169,896,752.

Total revenue for the period resulting from gas sales was $33,806,248.98 which represents an increase of $3,109,840.85 or 10.13 per cent over the corresponding revenue for 1933.

The sale of natural gas to industries for boiler fuel and other industrial purposes showed the largest gain, being credited with an increase of 102,979,014 therms. A total of 133,163,698 therms went into this service in 1934 compared with 30,184,675 therms for 1933. Revenue from industrial sales, sold on the interruptible supply basis, increased $1,285,815.06 over the corresponding figure for the preceding year.

An increase of 19,051,181 therms is credited to the sale of gas to general customers for residential, space heating, commercial and industrial purposes, representing an increase of 10.82 per cent. Totals sold in therms were 195,161,921 for 1934 as compared with 176,110,740 for 1933. The increase in revenue was $704,009.78. Rate reductions put into effect July 1, 1933 in this classification account for the fact that the net gain in revenue only amounted to 2.56 per cent. The maximum daily send-out for this classification in 1934 was 1,024,345 therms, registered on December 26th. An increase of 65,187 therms is represented in this figure over the corresponding send-outs for 1933.

Revenue from the sale of gas by the company and its subsidiaries to other gas utility corporations increased $1,120,016.01 for the year. Sales through this source in 1934 were 120,849,080 therms compared with 72,982,523 therms for 1933, or an increase of 47,866,557.

Of special significance in connection with the aggressive sales work being carried on by the company is the space heating campaign, which resulted last year in the addition of 10,000 new customers of this type to the lines. This brings the total space heating customers to approximately 22,000. Straight industrial and off-peak sales activities also account for a large increase in the volume of sales.

Oklahoma Utilities Ass'n Convention—March 12-13

THE 17th annual convention program of the Oklahoma Utilities Association, meeting in Oklahoma City, Okla., March 12-13, at the Biltmore Hotel, will include the following subjects of interest to the gas industry:

Address of Welcome—Honorable Tom E. McGee, Mayor of Oklahoma City.

Response to Address of Welcome—F. L. Chase, president, Community Natural Gas Co., Dallas, Texas.

Report of Manager—E. F. McKay, Oklahoma City.

Thirty-three Years in the Natural Gas Industry—by L. B. Denning, president, Lone Star Gas Co., Dallas, Texas.

Continuing the Load Building—by C. N. Robinson, vice-president, Public Service Co., of Oklahoma, Tulsa.

Legislation on the Loose—by Charles W. Person, director of Publicity and Advertising, American Gas Association, New York, N. Y.

Some Facts About TVA—by R. D. Cockrell, Oklahoma Utilities Association, Oklahoma City.

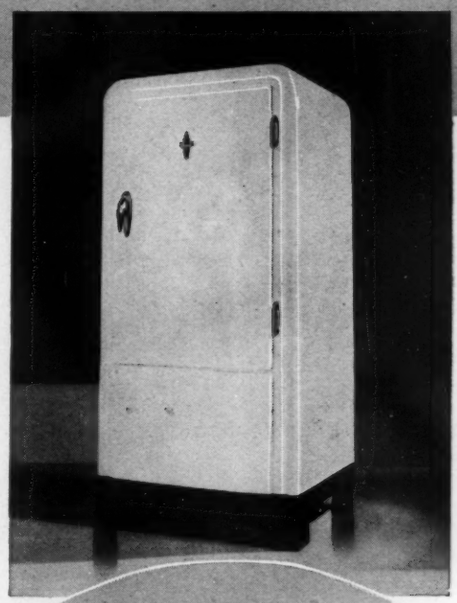
Dealer Cooperation—by Dr. G. W. Allison, Edison Electric Institute, New York, N.Y.

Conservation of Soil Combined with Control of Water Where It Falls, as the First Step in Flood Control—by Dr. N. E. Winters, Ph.D., Stillwater, Regional Director of Soil Erosion Service.

The convention dinner is scheduled for March 12, 6:30 p.m. Featured speaker on the program is William A. Irwin, Department of Economics, Washburn College, Topeka, Kan., whose subject will be "Where Is the New Deal Leading American Business?"

GAS COMPANIES FROM COAST TO COAST ARE ORGANIZING EARLY TO MAKE 1935 GAS REFRIGERATION'S YEAR

—and here's why:



1 **ELECTROLUX BUILDS CUSTOMER GOODWILL** by providing an appliance that is outstanding in efficiency, unmatched in dependability, and up-to-date in every respect. More than that, through dramatic national advertising Electrolux is constantly publicizing gas as the modern fuel.

2 **ELECTROLUX PROTECTS YOUR METER INVESTMENT** because it helps insure an all-gas kitchen. Each new Electrolux on your lines re-sells gas service as an essential for the modern home, and guards the cooking load.

3 **ELECTROLUX IS A 24-HOUR-A-DAY LOAD BUILDER** that turns convenience or marginal users into profitable customers. The gas consumed each month by Electrolux assures your company additional income for years to come without additional outlay for plant investment.

4 **ELECTROLUX HELPS THE SALE OF OTHER GAS APPLIANCES** by stimulating customer interest in gas water heating, gas house heating and the other uses of gas in the home. Gas companies have definitely proved that merchandising effort applied to gas refrigeration provides an impetus to the sale of all gas-using appliances.

1935 ELECTROLUX

offers these important Sales Features

NEW BEAUTY
GREATER EFFICIENCY
ADDED CONVENIENCE
FAMOUS OPERATING ADVANTAGES

YOU'LL FIND—as companies the country over are finding—that active promotion of gas refrigeration pays worthwhile dividends. For in beauty and performance, the new 1935 Electrolux is an appliance every gas company can offer with pride to its customers. By planning now, you can get in *right at the start* of this year's big opportunity for refrigeration sales . . . make certain that the refrigerators installed in your gas territory are *gas* refrigerators! For sales and merchandising assistance, write—wire—or phone Servel, Inc., Electrolux Refrigerator Sales Division, Evansville, Ind.

THE ROMANCE AND MODERNITY OF GAS is continually being impressed on the public through national magazine advertisements like this one. It is a part of Electrolux's 1935 advertising—*the greatest advertising campaign ever run on any gas appliance!*

AT LEFT:

Twenty-four states were represented in attendance at the Dallas, Texas, combined meetings of the Southern Gas Association and Southwestern Regional Gas Sales Conference; view shows a general session audience.

A.G.A. Sales Meeting Program Keyed to Industry's Present Needs

BEGINNING on page 17 of this issue *Western Gas* in abstract form reviews some of the papers of leading interest from the programs of the three regional sales conferences held last month by the Commercial Section of the American Gas Association; subsequent issues will cover others of the papers.

DRAMATIZED ACTION ENLIVENS MID-WEST CONFERENCE

The Mid-West Regional Gas Sales Conference meeting in Chicago, February 14, 15 and 16 not only drew the largest registration of gas men of any previous meeting since 1929 but veteran delegates testified that it was one of the best conferences ever held from the standpoint of sustained interest.

A total of 312 delegates registered, but at 4 p.m. on the closing day a count of attendance revealed 437 people listening intently to the skit being produced by W. L. Jones, Chairman of the Conference and his associates from the St. Louis County Gas Co. at Webster Groves, Missouri.

This skit was designed to show the specific use to which the telephone can be put in connection with gas househeating promotion, and reproduced experiences of the Webster Groves company.

Just prior to this skit, E. J. Boyer of the Minneapolis Gas Light Co. and Ed Swenson with other associates dramatized the scenes now taking place in their offices in connection with househeating promotion following the introduction of natural gas to the city.

Charles Luther, in charge of arrangements for the conference, was responsible for a third piece of dramatized action when he brought into play a large gas flood light especially installed for the occasion. Just as J. Frank Jones of the Battle Creek Gas Co. came to a fitting part of his address on the subject of "Gas Flood Lighting", the room lights were turned out and the big gas light burst into brilliance.

W. R. Evans of The Peoples Gas Light and Coke Co. presided at the closing meeting, at the end of which W. L. Jones as the outgoing chairman introduced A. E. Schwarz of the Minnesota Northern Power Co. and this year's vice-chairman, as the new chairman of the conference. H. K. Dropp of the Milwaukee Gas Light Co. was named as vice-chairman for the coming year.

The registration list showed 131 present from Illinois, Michigan 30, Indiana 37, Wisconsin 32, Ohio 7, Iowa 16, Minnesota 16, Missouri 13, New York 5, Nebraska 9, Kansas 6, Pennsylvania 8, Kentucky 1, and Colorado 1.

A Home Service session was held in connection with the Conference this year, with Saturday morning being given over to a discussion of this activity. Not only was this meeting widely attended by the Home Service directors in the Middle West but numerous of the commercial managers remained to profit directly from this program.

Isabel C. Fallon of the Western United Gas and Electric Co. of Aurora presided over this meeting.

Margaret Nevins of the Syracuse, New York Lighting Co., Chairman of the A.G.A. Home Service Committee, spoke on "Home Service and Sales." "Home Service and Home Modernization" was discussed by B. T. Franck, American Light & Traction Co., chairman, A.G.A. Home Modernization Committee. Following this forceful address Mr. Franck requested that Harry Swenson of The Peoples Gas Light and Coke Co. discuss the home modernization work of his company.

"Home Service in Trade-Dealer Contacts" was discussed by H. H. Koelbel of the Consumers Power Company. This was followed by a symposium of 3-minute talks by several home service directors.

Some of the advertising and home service bulletins of the various companies were displayed on placards at the rear of the assembly room.

A Home Service luncheon was held immediately following the morning's program. Mrs. Anna J. Peterson, Director of Home Service of The Peoples Gas Light and Coke Co., presided at this luncheon.

COMBINED DALLAS MEETINGS PROVE UNQUALIFIED SUCCESS

TWENTY-FOUR states and the District of Columbia contributed to registrations for the first combined meeting of the Southern Gas Association and the Southwestern Regional Gas Sales Conference, at Dallas, February 20-23. Registration totalled 279, but attendance exceeded 400 at some of the sessions.

L. B. Denning, president of the Lone Star Gas Co. and vice-president of the American Gas Association, welcomed the delegates to Dallas. Development of more aggressive sales methods in answer to the industry's present need was set as the conference theme by W. W. Winter of the Atlanta Gas Light Co., president of the Southern Gas Association, whose address was read by S. L. Drumm, secretary-treasurer of the Association. Conference sessions were presided over by H. E. Meade of the New Orleans Public Service, 2nd vice-president of the Association, in the enforced absence of President Winter and 1st Vice-president C. B. Gamble.

The program followed was that of having general sessions in the morning hours, leaving the afternoon for the Gas Sales Conference programs. The Industrial and Commercial Forum and the Technical Section held separate meetings on two of the afternoons.

Three highly interesting addresses on T.V.A. Policies As They Affect the Gas Industry were a notable feature of the program. L. L. Baxter of the Southern Union Gas Co. read an address prepared by C. E. Dougherty, commercial manager of the Chattanooga Gas Co.; S. L. Drumm presented the paper of W. W. Winter on the subject and W. E. Leverett, commercial manager of the Nashville Gas Heating Co., presented a very vivid picture of the superiority of the gas range over the T.V.A. electric range. In imagination he transposed his audience of gas men into an audience of electric men who were confronted with selling the electric range in competition to the new model gas ranges, and strongly established the competitive advantages of the gas range over the electric.

On Wednesday afternoon C. L. Nairne of the New Orleans Public Service Company,

THE WORLD'S MOST BEAUTIFUL *Gas* BOILER

The EMPIRE "IDEAL"

Ready for Delivery
MARCH 15TH

AGP

AMERICAN GAS PRODUCTS CORPORATION

DIVISION OF AMERICAN RADIATOR COMPANY

40 WEST 40TH STREET · NEW YORK, N.Y.

chairman of the Technical Section, presided over a special meeting of this group.

J. M. Clann of the New Orleans Public Service Company, chairman of the Industrial Commercial Forum, directed a round-table discussion for this group, on the second afternoon of the conference.

The conference activities closed on Saturday morning with a Home Service program that began with a Home Service breakfast. Miss Nell Reid of the San Antonio Public Service Co., was presiding chairman.

Among the informal group meetings held during the convention was a luncheon of advertising men, called by Will C. Grant of the Lone Star Gas Co., who was host at the meeting. A special meeting was also held on heating and air conditioning.

New officers elected by the convention were: C. B. Gamble of the Birmingham Gas Co., president; H. E. Meade of the New Orleans Public Service Co., 1st vice-president; Chester L. May of the Community Natural Gas Co., Dallas, 2nd vice-president. S. L. Drumm of the New Orleans Public Service, who has served the convention so well for the past few years as secretary-treasurer, was re-elected to this post.

Directors names were E. S. Dickey, American Meter Co., Baltimore, Md.; R. F. Fledderman, Estate Stove Co., Hamilton, Ohio; D. H. Levan, Jacksonville Gas Co., Jacksonville, Fla.; J. V. Strange, United Gas Co., Houston, Tex.; E. B. Ballinger, American Stove Co., Kansas City, Mo.; C. K. Patton, Dallas Gas Company; H. G. Bonner, Knoxville Gas Co.; and C. F. Carter, Nashville Gas Heating Co., Nashville, Tenn.

Cooperative Hotel and Restaurant Gas Range Sale

A THREE-COMPANY joint promotion on commercial cooking equipment in Southern California, extending from November 1 to March 1, was carried on by the Los Angeles Gas and Electric Corp., Southern California Gas Co. and Southern Counties Gas Co. Approximately 929 sections of hotel and restaurant ranges were sold, complete with high shelves, salamanders, broilers, griddles, etc., together with accessories such as deep fat fryers and extensions. Merchandise sales came to approximately $148,000 and the equipment sold represented approximately a 15 per cent replacement of existing equipment. So successful was the effort that a brief summary of methods used is offered.

A committee made up of Harry L. Warren, of the Southern California Gas Co., C. A. Thorp, Los Angeles Gas and Electric Corp., and D. L. Leahy, Southern Counties Gas Co., handled campaign details, unifying the work of the hotel and restaurant sales personnel of the participating companies and contacts with dealers and manufacturers.

Sales were made entirely through hotel supply dealers, Barker Bros., Bond Hardware Co., Dohrmann Hotel and Supply Co., Gottschar and Edelstein and Ott Hardware Co. participating.

An initial survey of the field was made by the gas companies, on the basis of which dealers were provided information on the total number of establishments sufficient in size to use heavy duty cooking equipment. The amount of present equipment and its condition was also indicated.

In making the above survey all commercial cooking equipment was thoroughly adjusted, and company representatives made personal contacts announcing the special offers on new equipment during the coming campaign. Prospects were gathered by salesmen and appliance adjusters, and these made available to the participating dealers.

The companies also distributed 5,000 copies of the "Cooking for Profit" publication, the particular issue featuring new oven control low temperature meat cooking methods. A stuffer enclosed with the above mailing told of the campaign offer—principal inducement of which was a 25 per cent allowance for old cooking equipment, applied as the down payment on a new gas range of equivalent size. Only ranges with oven heat control and insulated ovens were covered in the campaign. No cash down payment, 18 months to pay, and carrying charge of 6 per cent on unpaid balance, were added features of the offer. The stuffer also called attention to the display of modern hotel and restaurant equipment installed in the Los Angeles Gas and Electric Corp. building.

Dealers and manufacturers also brought out special mailing pieces for the campaign. Additional discount of 3½ per cent of retail list price was offered by several manufacturers to their dealers.

Old ranges were purchased from the dealers by the gas companies, the price paid being 13 per cent of the retail list price of the new gas range.

Dealer sales contracts for hotel and restaurant type ranges meeting campaign requirements were purchased by the utilities, 90 per cent of the unpaid balance less carrying charge being paid at the time of the contract's acceptance, and the remaining 10 per cent when the consumer paid out the contract in full. The gas companies undertook to make the collections, and in case of default on payments, recourse is to be had upon the dealers. Delivery and installation were not included in the contract, and the dealer agreed to render the usual servicing on equipment sold.

Two sales dinner meetings were held during the campaign, for dealer salesmen, gas company sales supervisors and appliance adjusters. At the second meeting the roasts served were the result of a meat shrinkage test, demonstrating beyond question the gas savings and lessened shrinkage achieved by using lower oven temperatures. Both roasts were cooked to an equal degree of "doneness," the tests being conducted by two of the oldest members of the "Chefs de Cuisine Association of Southern California." Test results were as follows:

	ROAST NO. 1 Cooked at 450°	ROAST NO. 2 Cooked at 300°
Evaporation loss	15.10%	6.07%
Drip loss	6.90	3.05
Total loss	22.00	9.12
Time	3 hours	3½ hours
Fuel used	69.1 cu. ft.	33 cu. ft.

Throughout the campaign effective use was made of such data as the above, to indicate savings possible with modern insulated, thermostatically controlled gas ranges.

Every installation of new equipment was followed up immediately by the gas companies; burners were adjusted, oven thermostats were calibrated and the equipment generally checked over.

A typical commercial kitchen, modernized with insulated gas ranges, thermostatically controlled ovens, and deep fat fryers, in the Southern California campaign. Kitchen is in the "Cottage Inn," Wilshire Boulevard, Los Angeles.

Employees Form Credit Union

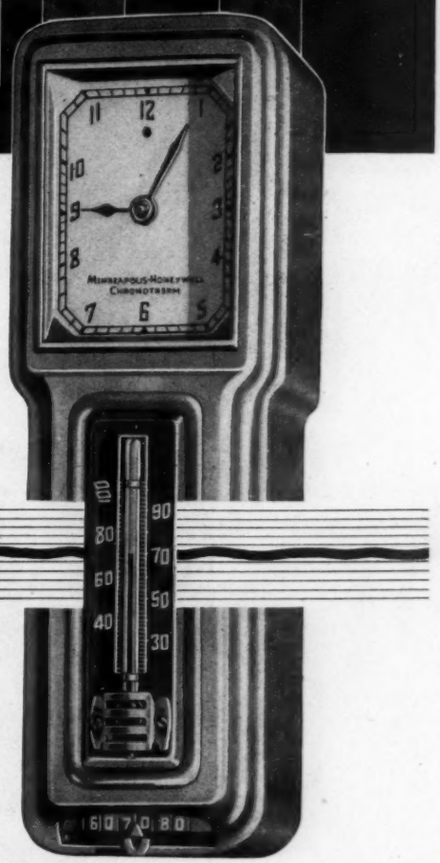
Employees of The Peoples Gas Light & Coke Co. have completed the organization of the P.G.L. and C.C. Employes' Credit Union, to be operated cooperatively as a saving and loan club for members. Eighty-three employees have signed the roster as charter members.

Always **JUST RIGHT**

with the

MINNEAPOLIS HONEYWELL

CHRONOTHERM

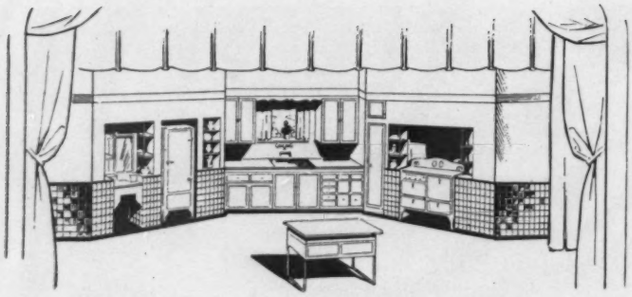


WHEN you install a Chronotherm and other Minneapolis-Honeywell equipment with your gas burner, you know that it not only will operate "just right" but that your customer's temperature will always be "just right" . . . It's a good deal all around when you standardize on Minneapolis-Honeywell. Your service is kept at a minimum and your customers derive the greatest satisfaction. Show them the advantages of the low water cutoff, lowered night temperature and limit controls. They'll appreciate the improved performance with these controls and you will make extra profit. Minneapolis-Honeywell Regulator Co., 401 East 28th Street, Minneapolis, Minnesota. Branch and distributing offices in all principal cities.

MINNEAPOLIS-HONEYWELL

Control Systems

Quality Controls Cost Less Than Service



AT LEFT:

Sketch of model kitchen to be used at newspaper cooking schools throughout Southern Counties Gas Co. territory.

Model Kitchen for Southern Counties Cooking Schools

SOUTHERN Counties Gas Co. has had a model kitchen constructed for use at 16 daily newspaper cooking schools which are being held in the company's southern California service area from March 6 to June 21. Later the kitchen will serve several schools conducted by weekly newspapers.

Details of the kitchen, supplied by W. D. Thurber, Southern Counties' advertising manager, are as follows: The walls are 8 feet high, and with the end drapes the kitchen has a flexible spread of 12 to 34 feet, and a depth of 6 to 10 feet. The tile is a soft green and the upper wall an attractive ivory. A No. 70 Electrolux gas refrigerator sits in the recess provided, and the recess for the gas range is sufficiently large to accommodate any model the newspaper may desire to feature. The kitchen was built at an approximate cost of $400.

For each cooking school the gas company is providing the home service director, her assistant, the daily programs, attendance tickets and 300 inches of display advertising. An attendance of 50,000 or above is estimated for the series of schools.

Three attendance tickets, of different color, are issued for each school and used in connection with door prizes. To be eligible for a prize each ticket must be filled out with information useful to home service and new business departments. Among the facts called for are types of water heater, range and refrigerator now used; number in family; recipe information desired; age and condition of range.

29th State Convention Scheduled in Missouri

THE 29th annual State convention of the Missouri Association of Public Utilities will be held April 24, 25, and 26 at Kansas City, Mo., at the President Hotel. President Fred Karr, of St. Joseph, Mo., will preside at the business sessions.

Fred Karr

Among the speakers this year will be: Congressman Joseph B. Shannon, Washingington, D. C.; Major Alexander Forward, New York City, managing director, American Gas Association; Dr. E. T. McGaugh, Jefferson City, Mo., Missouri State Health Commissioner; Prof. George W. Stephens, St. Louis, Mo., dean of economics, Washington University; Frank C. Lynch, managing director of the Kansas City Safety Council; E. L. Hough, St. Louis, Mo., Union Electric Light & Power Co.

The program is being completed by the Program Committee, consisting of C. A. Semrad, chairman, St. Joseph Railway, Light, Heat & Power Co.; H. E. Scheark, Kansas City Power & Light Co.; Dudley Sanford, St. Louis County Gas Co.; C. J. Prashaw, Missouri Power & Light Co.; and R. L. Shuck, Springfield Gas & Electric Co.

The Association is composed of virtually every privately-owned gas, electric, water, and street railway company in Missouri.

A safety meeting and round-table discussion of accident prevention on the afternoon of April 24 will be a new convention feature this year. E. S. Willever, Springfield Gas & Electric Co., is chairman of the committee in charge of the meeting.

The annual dinner and dance will take place on the evening of April 26. Men's and women's golf contests will be held on the afternoon of April 26. The various entertainment activities are being prepared by the Entertainment Committee, of which Paul C. Ford, Kansas City Gas Co., is chairman.

Adolph Jansen Joins Electrolux

Adolph Jansen, Jr., has joined the sales promotion department of the Electrolux Refrigerator Sales Division of Servel, Inc., assisting Hank Boyle, sales promotion manager of the company. He will divide his time between the New York office and the factory in Evansville, Ind., handling special dealer promotion.

Mr. Jansen has been associated with many well known advertising agencies in the past and for several years conducted his own advertising business. He most recently was advertising and sales promotion manager for the General Accessories Co., Inc., of New York City.

Charles W. Gale New Business Manager at Knoxville

CHARLES W. Gale has been appointed new business manager of the Knoxville (Tenn.) Gas Co., according to announcement of H. G. Bonner, general manager of the company. He was formerly superintendent of the industrial gas, commercial gas and district steam heating division of the Public Service Co. of Colorado's new business department.

Charles W. Gale

Mr. Gale is a graduate electrical engineer from Benson Institute of Technology, Portland, Ore. He served in Oregon with the Portland Railway Light and Power Co., in Alaska for the Libby McNeil and Libby Co., and spent more than two years in China as sales engineer for the American Trading Co., returning to the United States as part owner of an electrical manufacturing enterprise.

Joining the Doherty organization in 1923 as industrial fuel sales engineer for the Public Service Co. of Colorado at Denver, Mr. Gale in 1927 was placed in charge of the Denver industrial gas division. Within the next three years additional responsibilities were added, first the commercial gas load-building activities of the company, and later on the district steam heating promotion. He is vice-chairman of the American Gas Association Industrial Gas Section for the year 1935.

Lone Star Sales Staff Hears Volume Cooking Discussion

Coincident with the arrival of various managers, sales supervisors and salesmen of the companies in the Lone Star group to attend the Southern Gas Association and Gas Sales Conference held in Dallas, last month, a special meeting of the group was held in the hotel and restaurant department in the basement of the Dallas Gas building to hear a talk given by Russell L. Cox, representative of the hotel and restaurant division of the Detroit-Michigan Stove Co. Mr. Cox, introduced C. K. Patton, showed the trends in modern kitchens and presented a discussion of volume cooking.

Open House at Huntington Park

Los Angeles Gas and Electric Corp. held open house in its Huntington Park office on January 26, commemorating four years of service from this building, opened on January 26, 1931. J. C. Guilinger, district manager, sponsored the affair, which brought between 1,500 and 2,000 persons to the office between 1 p.m. and 5 p.m.

Peoples Gas Appoints Contact Men

The Peoples Gas Light and Coke Co. has created a staff of special representatives, 10 in number, to serve as direct personal contacts with customers. William A. Schueler has been appointed as supervisor of the representatives.

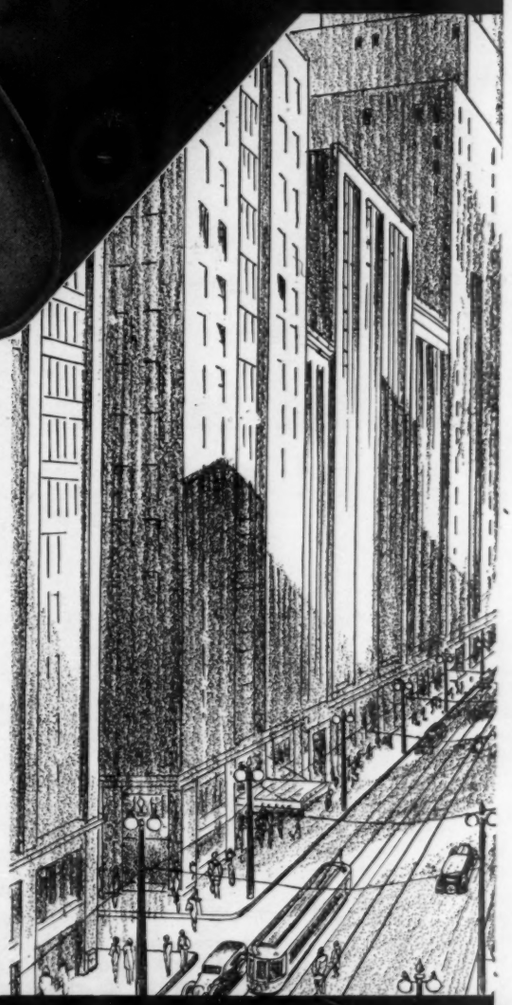
GAS MAINS AT THEIR BEST!

THERE is no field where the superior qualities of high-grade steel pipe, and of NATIONAL Steel Pipe in particular, make it more definitely to be preferred than in the gas industry. No other pipe material will yield the Gas Company greater safety, efficiency, and economy. No other pipe material can be used with greater satisfaction and profit. Check the advantages and the reasons are clear enough. Specify NATIONAL for assured performance under the shocks and pressures of modern service. Write NATIONAL engineers for further information.

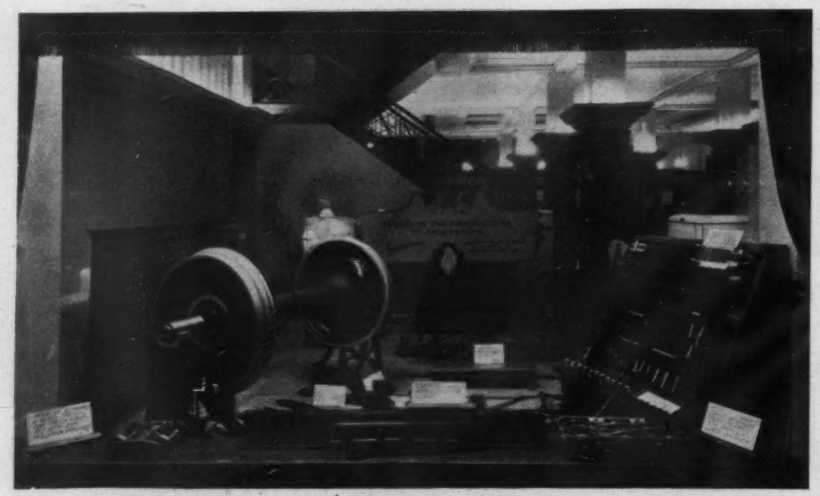
NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

United States Steel Corporation Subsidiary



NATIONAL STEEL GAS MAINS



Two of the industrial windows used by Northern Indiana Public Service Co., featuring products of American Steel Foundries (upper) and International Lead Refining Co.

Industrial Windows Favored at Hammond, Indiana

AN EXPERIMENT to determine the value of industrial gas window displays was begun last year at the home office of the Northern Indiana Public Service Co., at Hammond, Indiana, and is being continued this year as a laboratory test, the results of which can be applied to other districts in the 12,000 square miles of territory served by the company.

The displays were planned originally as a means of selling the public on the theory that gas was the modern fuel, whether it be for a home or a huge industry. The Calumet region of Indiana, known during the halcyon days as the Workshop of America, is the location of a number of industries, ranging from steel to soap making, which use gas in the manufacture of their products.

Displays were not planned with the idea that the head of any industry would walk by the window and say "Well, I must switch to gas." They were planned more from the standpoint of illustrating the wide variety of uses of gas and its economy and dependability.

One of the first points proved by the exhibits was the elementary one that those having motion attracted more attention than those which were without motion, even though the latter might be highly artistic in their composition and execution. A standard type of sign was used in all of the displays, which were provided by local industries without cost to the company other than the providing of a few small signs.

The two window displays shown herewith both had motion and both attracted crowds of persons, both in the day time when they were not illuminated, and at night when the windows were brightly lighted.

The display at the top was provided by the American Steel Foundries, one of the large industries of the Calumet region. A tiny motor connected to the huge wheel, weighing several thousand pounds, by only a small silken thread rotated the wheel and attracted the attention of spectators to the display showing the diversity of products of the foundry, and brought home to them the sign in the background stating that gas was used in the manufacture of these products because of its accuracy of atmosphere control, cleanliness and unchanging heat value.

The lower picture is of the International Lead Refining Co. window display. The display showed the making of products of the company from mine through refining furnace, through the mill and down to the finished products. The message of this display was that gas was used because of its cleanliness and ease of temperature control.

An excellent display was provided by a book manufacturer, who used gas in the printing and making of books, because of flexibility, economy and ease of control. Other displays, past and present, include products ranging from tire chains to candy and tank cars.

It is the opinion of officials of the Northern Indiana Public Service Co. that these displays have stimulated good will and have helped bring to the citizens of Hammond the fact that that part of the state is the home of many giant industries, which contribute much to the advancement of the community.

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10 Million Cu Ft. Michigan Natural Gas Sold Daily

Upward of 10 million cubic feet of natural gas is being sold daily from central Michigan field wells, of which The Consumers Power Co., Jackson, drawing from the Broomfield area is taking about 5 million cubic feet daily; The American Michigan Pipeline Co., drawing from the new Austin field in Mecosta County to serve Muskegon, Muskegon Heights and Big Rapids, is taking about 3½ million cubic feet daily; and the Gas Corp. of Michigan, drawing from the Vernon field in Isabella County, is using about 2 million feet daily to supply Mt. Pleasant, Claire and smaller towns.

Virgil W. McClintic, secretary-treasurer of the Michigan Cities Natural Gas Corp., reports a sale of approximately one billion cubic feet of natural gas during 1934, to the Consumers Power Co., which serves Saginaw, Bay City, Midland, and 20 smaller communities. The Michigan Cities Natural Gas Corp. controls extensive acreage in Isabella County, owning 22 producing wells and buying for resale.

Paul C. Kreuch Managing Chicago Office For Pittsburgh Equitable

The Pittsburgh Equitable Meter Co. and its subsidiary, the Merco Nordstrom Valve Co., announce the appointment of Paul C. Kreuch as district manager of their Chicago office. He fills the vacancy made by the transfer of George W. Bailey to the main offices in Pittsburgh, Pa., as national representative.

Paul C. Kreuch

Mr. Kreuch comes to Chicago from the Oakland, Calif., factory of these companies where he was assistant to Walter Davis, vice-president. In his new position he will be in charge of sales for the district embracing the states of Michigan, Illinois, Indiana, Wisconsin and Minnesota.

BUTANE-PROPANE NEWS

Michigan Bottled Gas Firm Displaying "Showroom on Wheels"

Michigan Gases, Inc., serving bottled gas in Grand Rapids, Kalamazoo, and Benton Harbor, Mich. areas, is employing a "showroom on wheels" to demonstrate its bottled gas services. The unit consists of a completely equipped kitchen, operated on bottled gas, with reproducer, radio and public address systems. It is installed in a specially built trailer of welded steel construction, dark blue body and aluminum top, with the name of the firm in metallized wood letters on the sides. The car is streamlined and very modern in style. It weighs, loaded, around 5,000 pounds. Ample facilities for over-night trips are provided for the two salesmen who form the crew.

Philgas Reduces Installation Charge on Service Equipment

A $9.75 installation charge, effective March 1, was announced by the Philgas Department of Phillips Petroleum Co. at its third annual meeting, held February 23-25 at the Hotel Lincoln in New York City.

The new price, which is a radical reduction of $26.75 from the previous price of $36.50, is solely a labor charge. Of this $4.75 is for piping and $5.00 for installing the gas equipment.

Competing companies were expected to make almost simultaneous reductions in their own price schedules.

Butane Stand-by with 75,000-gal. Storage for Western United

Western United Gas & Electric Co., with headquarter offices at Aurora, Ill., has recently completed the construction of a butane stand-by plant at the Lockport plant of the company, near Joliet. The plant will serve as a stand-by for the entire system of the company which supplies approximately 80 communities. A 75,000-gallon butane storage tank was constructed. In case of an emergency the butane will be mixed with 550 B.t.u. water gas to produce 800 B.t.u. gas equivalent to the natural gas now being supplied.

Promotional Changes in Skelgas Organization

Recent promotions in the Skelgas Department of Skelly Oil Co. include the appointment of W. B. Ockerhausen as division supervisor in charge of Illinois; A. G. Schroeder to an Indiana district; Paul Hammond as district salesman for Nebraska, succeeding J. F. Kempker who has been transferred to a Wisconsin district; J. H. Parkay, C. J. Chubb, G. A. Arnold to districts in Illinois with headquarters, respectively, at Danville, Elgin and Chillicothe; and G. R. Collins to a district comprising eastern Missouri.

Application of the Federal Gasoline Tax to Sale of Liquefied Petroleum Gases

At the annual meeting of the National Bottled Gas Association held in New York on January 23, E. M. Borger, attorney for the Hope Construction and Refining Co., presented a paper on application of the federal gasoline tax to sales of liquefied petroleum gases. Highlights of Mr. Borger's discussion are reviewed below:

The definition of gasoline contained in the Revenue Act of 1932 included only those products *"whose chief use* . . . is as a fuel for the propulsion of motor vehicles," etc.; however, in the Revenue Act of 1934 (effective June 9, 1934) the definition was broadened to include two classes of products; those falling in the so-called "A" class being those commonly or commercially known or sold as gasoline, and those falling within the "B" class being all other liquids sold for use as or used as a fuel for the propulsion of motor vehicles. The fuels in class A are taxable regardless of their use. The Bureau of Internal Revenue by Article 30, Regulations 44, and Sales Tax Ruling No. 786 published as VIII-49-7172 has set up certain tests for determining in which of these classes a given product may be included. In order to come within class B a product must (1) evaporate more than 90 per cent at 310° F. *and* have an A.S.T.M. octane number less than 70, or (2), have a Reid vapor pressure at 100° F. of more than 30 pounds.

Of the liquefied petroleum gases pentane, as usually manufactured, is the only one which fails to meet these tests. It does not meet the first test because, while it does evaporate more than 90 per cent at 310° F., it does not ordinarily have an A.S.T.M. octane number of less than 70.

Some of the eastern companies have attempted to secure a revision of these specifications so as to include in class B any product which has a boiling range of 20° F. or less, which would cover pentane, but without success—so that as the regulations now stand pentane is subject to tax regardless of its use. It is reported that some of the companies are arranging to produce pentane with an octane number of less than 70 and thus avoid the tax unless the product is actually used for motor vehicles.

The products which fall within class B (including butane and propane) are taxable unless at the time of their sale the vendor secures an exemption certificate showing that the product is purchased for non-motor fuel uses. Forms of certificate, both on sales to the consumer and on sales for resale, are provided in Articles 33 and 34 of Regulations 44, and unless the vendor makes special application to the Bureau of Internal Revenue and secures a ruling applying to its particular business it is necessary to secure a complete chain of exemption certificates from the producer to the ultimate consumer in order to avoid payment of the tax.

The Bureau of Internal Revenue has shown a disposition to be very reasonable and fair in its requirements with reference to securing exemption certificates. Thus, for instance, it is reported that if application is made to the Bureau by the producer, the Bureau will waive the requirement of exemption certificates in connection with all sales of propane where sold for domestic and industrial purposes and not for motor use. Certain companies have also secured rulings relieving them and their customers of the necessity of securing exemption certificates on the sale of butane in cylinders to the ultimate consumer. However, on all sales of butane in bulk and also on all sales in cylinders for resale exemption certificates must be secured.

It is important to note that the rulings referred to above are not blanket rulings and protect only those companies which make special application therefor.

Two Supplements to Pamphlet No. 9 Now Effective

The Bureau of Explosives has issued two Supplements, No. 9 and No. 10, to its Pamphlet No. 9. Supplement No. 9 is known as Part V of the I. C. C. Regulations for the Transportation of Explosives and Other Dangerous Articles, and applies to such transportation by water on freight and freight and passenger vessels. Supplement No. 10 is known as Part VI of the I. C. C. Regulations for the Transportation of Explosives and Other Dangerous Articles and applies to transportation on public highways by motor truck or other vehicle. The water regulations became effective February 1, 1935, and the motor truck regulations became effective on March 1, 1935.

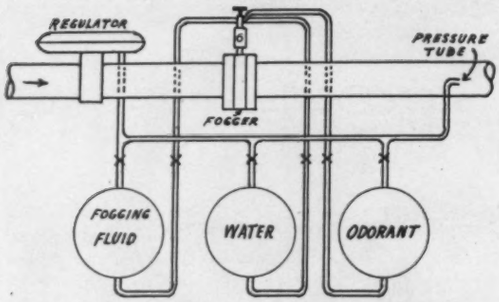
Heads Underwriters Laboratories

A. R. Small, formerly vice-president of Underwriters' Laboratories in charge of the New York branch, member of the board of directors of the American Standards Association, has been elected president of Underwriters' Laboratories to succeed Dana Pierce, deceased. Mr. Small has been vice-president of the Laboratories since 1916.

N.F.P.A. Annual Meeting

The National Fire Protection Association has announced that its annual meeting will be held in Atlanta, Ga., May 13-16, 1935.

"GASAIR" presents the perfect FOGGER



Low in cost, easy to install, simple, positive in action, automatically controlled. For fogging, humidifying or odorizing.

Principle: The pressure drop incidental to a regulator is taken over a set of atomizing nozzles, rather than the valve of the regulator. The quantity of fogging fluid drawn in is automatically regulated by the load. The "GASAIR" Fogger is simply clamped between two standard pipe flanges. **Price, with pressure tube, on application; but ordinarily, only $10 per inch nominal diameter of pipe.**

For blue-print, full particulars, write

Upstream face of fogger, showing integral by-pass, adjustment of which may be made from outside, controlling pressure-drop and fogging.

UTILITY DEVELOPMENT CO.

5815 THIRD STREET *John K. Heller, President* **SAN FRANCISCO**

KEROTEST
tested and proved
FORGED BRASS
VALVES,
MANIFOLDS
and FITTINGS
for
PROPANE
BOTTLED GAS
SERVICE

Write for descriptive circular

KEROTEST MFG. CO.
PITTSBURGH, PA.

KEROTEST

Philgas Authorizes Use of "Listed" Ranges

Any "listed" range, manufactured according to specifications for bottled gas and otherwise acceptable, may now be used in connection with the gas service provided by the Philgas Department of the Phillips Petroleum Co. Under a former policy, effective in all but three retail districts, only one manufacturer's range was permitted to be used in connection with the company's gas service.

New Director for A.P.I. Research Project

Dr. Frederick D. Rossini, of the National Bureau of Standards, Washington, D. C., has been appointed director of the American Petroleum Institute research project on the isolation and identification of hydrocarbons in Petroleum, formerly under the direction of the late Dr. E. W. Washburn.

Fuelite Moves to Lexington

Fuelite Natural Gas Corp., formerly at 705 Main St., Waltham, Mass., has moved its headquarters to 315-319 Merritt Road, Lexington, Mass.

Annual Skelgas Meeting

The Skelgas Department of Skelly Oil Co. held its annual meeting February 1 at the Ambassador Hotel, Kansas City, Mo.

W. E. Worth to Represent Temperature Control Accounts

William E. Worth, Pacific Coast manufacturers' representative located at 30 Front St., San Francisco, has recently assumed representation for the Partlow Corp., New Hartford, N. Y., thermostat manufacturers, and the Motor Meter Gauge & Equipment Co. of La Crosse, Wis., manufacturers of a complete line of temperature recording equipment. Mr. Worth has been established for several years in San Francisco as representative for the American Gas Furnace Co. of Elizabeth, N. J., and Charles A. Hones, Inc. of Baldwin, N. Y., producers of immersion gas burner equipment.

Precision Control Company Formed in San Francisco

The Precision Control Co., located at 1257 Folsom Street, San Francisco, Calif., has been formed, with L. P. Stoker, for six years with the Pacific Gas and Electric Co., as president. The company manufactures a precision control applicable to steam plants of all sizes, which has been in process of development and service testing for four years. A feature of the product is an adjustment permitting the setting of the instrument to automatically maintain predetermined and variable ratios of fuel and air.

Norman Short Course Committee Winding Up Program

The general committee in charge of the Southwestern Gas Measurement Short Course, to be held at the University of Oklahoma, at Norman, April 23-25, will meet March 12, during the annual convention of the Oklahoma Utilities Association, for consideration of final details of the short course program for 1935. D. C. Williams, of Ponca City, is chairman of the general committee.

Air-Mix to Natural Change-Over

Lowville (N. Y.) Gas Co., late in 1934 changed over from liquefied petroleum gas air-mix service to natural gas, according to E. H. Barnes, treasurer and general manager. The company had been serving 537 B.t.u. butane-air gas since February, 1931 to approximately 200 consumers. Natural gas supply is now obtained from a field about 6½ miles from Lowville.

Butane-Air Service by May for Southern Oregon Gas Properties

Construction work is under way for change-over of the Ashland, Phoenix, Talent, Medford, Grants Pass and Roseburg, Ore., properties of Southern Oregon Gas Corp. from oil gas service to butane-air. Completion of the plants and distribution system extensions is excepted in May.

Butane Distribution System Begun

The city of Rushville, Ill., has just begun construction of its municipal plant to serve butane-air gas. Fifteen miles of distribution main is expected to be put into service, and 335 signed applications have already been received.

Gas Range Sales Contest

(Continued from Page 11)

lars and cents value of range sales per domestic meter on each company's lines) will be given beautiful loving cups, plaques or other tokens suitably inscribed.

Cash prizes ranging from $250 down will be awarded in each division to the individual sales people in the territories of the winning companies who achieve the highest records; these individual cash prizes are open to sales people both of the gas companies and of dealer organizations in the territories.

TABLE OF CASH AWARDS

Division I	
First prize	$250
Second prize	150
Third prize	100
Fourth prize	60
Fifth prize	50
Sixth prize	40
Seventh prize	25
Division II	
First prize	$250
Second prize	150
Third prize	100
Fourth prize	60
Fifth prize	50
Division III	
First prize	$250
Second prize	150
Third prize	100
Fourth prize	60
Division IV	
First prize	$250
Second prize	150
Third prize	100
Division V	
First prize	$250
Second prize	150
Division VI	$250

The individual sales people who score highest in each company's territory, whether the company received an award or not, will be presented handsome and appropriate lapel buttons.

Campaign Material

Excellent and complete campaign material is available from the committee. One portfolio covers the use of direct mail, together with sample literature which may be used. A series of sample campaigns for use either by utilities or dealers has also been prepared, and the A.G.A. Advertising Committee has compiled sample newspaper advertisements for the campaign. A campaign publication known as "M.G.R. Merchandising" (which means Modern Gas Range Merchandising), will bring ideas and campaign suggestions periodically throughout the contest, bearing particularly upon stimulation of dealer interest and sales. The first issue will be available through the Association to all registering utilities without cost, in quantities sufficient to distribute to their dealers. A special insert designed for utility use will suggest means for dealer cooperation.

The complete promotional material, suggestions and plans for conducting the contest will be furnished to registered contestants. Such contestants are privileged to pick out any 60-day period for their contest between the limits of March 1 and June 30, 1935. The 60-day period selected need not be *consecutive* but can be divided as desired within the limits of March 1 to June 30.

Those companies desiring to start their sales activity on March 1 were expected to have their registrations in the mail not later than midnight of March 4, while those wishing to open their activity after March 15 have been given until midnight of March 18 to mail their registrations to the committee.

The 1935 Domestic Range Committee which is conducting the contest is made up of the following:

Representing utilities: F. M. Banks, Charles A. Luther, Charles Merriam, Clinton A. Nash, and J. H. Van Aernam.

Representing manufacturers: Thomas E. Bullion, W. E. Derwent, Roger Gordon, Lucian L. Kahn, and Stanley E. Little.

J. W. West, Jr., secretary of the A.G.A. Commercial Section, is also secretary of the committee.

THE OVERWHELMING FAVORITE

There must be a reason why Hackney Liquefied Petroleum Gas Cylinders outnumber all others in service *combined* by two to one.

There must be a reason why such blue ribbon firms as: Shell, Standard, Phillips, Hope, Skelly—choose Hackney cylinders.

There is a reason. It is the efficient design and faultless workmanship of Hackney cylinders. Hackney has built them ever since Butane, Propane and Butane-Propane mixtures were first developed.

PRESSED STEEL TANK COMPANY

208 S. La Salle St. Bldg. Room 1185 CHICAGO, ILL.
6633 Greenfield Ave. MILWAUKEE, WIS.

Hackney MILWAUKEE

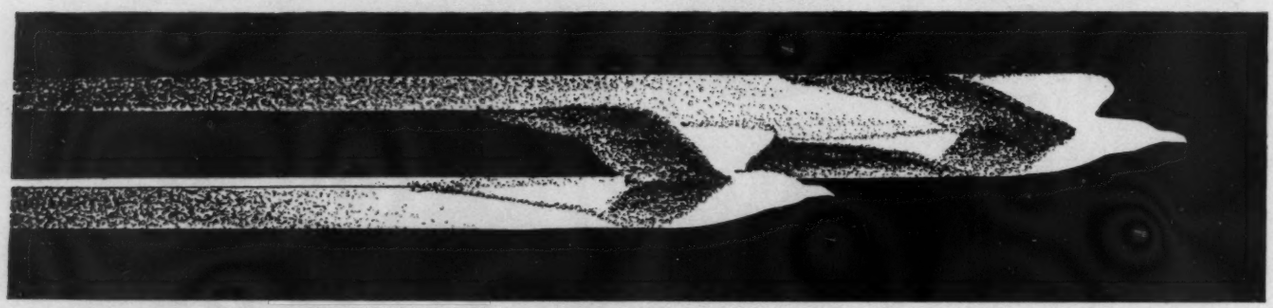
1363 Vanderbilt Concourse Bldg. NEW YORK, N. Y.
666 Roosevelt Bldg. LOS ANGELES, CALIF.

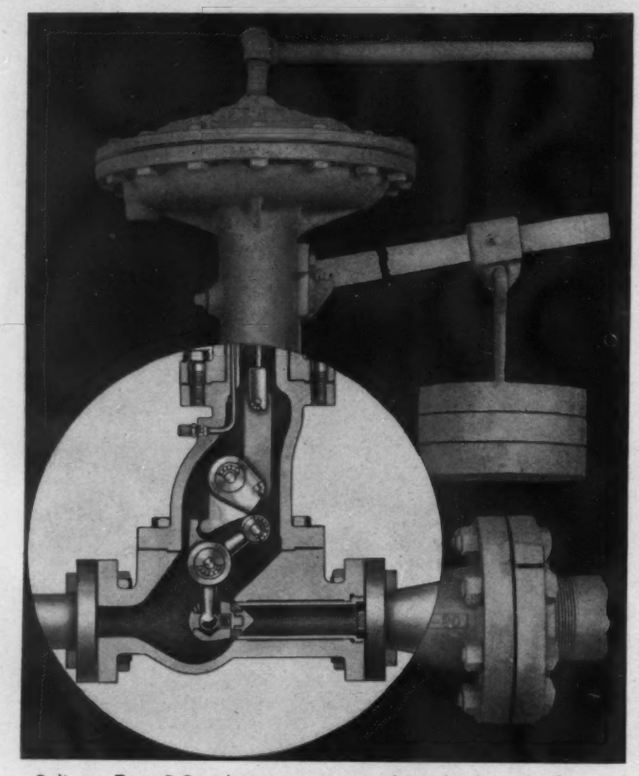
CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

Reorganization of Missouri Public Service Co. Asked

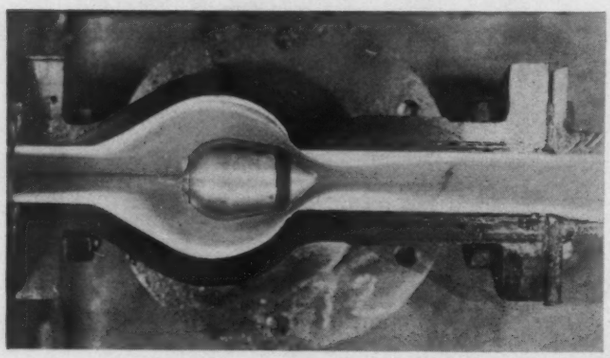
The Missouri Public Service Co., Warrensburg, Mo., on February 21 filed a petition for reorganization of the company pursuant to the provisions of Sections 77A and 77B of the Bankruptcy Act, in the District Court of the United States for the Northern District of Illinois, Eastern Division. The action came as a result of the February 19 meeting of the company's board of directors. Court hearing has been set for March 19.

STREAMLINED





Reliance Type P Regulator cut away to show clearly its perfect and simple operating principle.



Stream-line flow is shown in this unretouched photograph of fluid flow through the valve mechanism.

To Increase Capacity *and* Decrease Friction

In the Reliance Type P Regulator a single stream-line valve mechanism floats in the streamflow, insuring both maximum capacity and a minimum of friction. This stream-line valve is self-centering, with an orifice throat, and operates on a ball socket joint that maintains it in perfect alignment.

Because expanding gases and turbulence do not interfere with working parts of regulator mechanism, scouring action on valve stems, valves and valve seats, is reduced to a minimum. A removable valve seat with a long extension throat, fabricated of stainless steel, takes the shock of expansion and turbulence. Due to the fact that single valve construction is employed, whereby expansion of gas is down-stream of working mechanism, freezing is eliminated.

The Reliance Type P Regulator offers larger capacities than any other conventional type, and its installation can be made using smaller pipe size than is generally employed. Where main lines and service piping of a larger size are already installed, then the Regulator Venturi Reducer Fittings may be utilized. The Reliance Type P Regulator is made in 1″ and 2″ sizes only, with a maximum inlet pressure of 500 lbs. when fabricated in semi-steel. All steel body castings can be used up to 1500 lbs. maximum inlet pressure.

Reliance Regulator Corporation

1000 MERIDIAN AVE.
ALHAMBRA, CALIF.

REGULATORS YOU CAN RELY ON — RELIANCE — SINCE 1910 — TRADE MARK

RELIANCE REGULATORS

MEASUREMENT and CONTROL

Notes on Automatic Control

By P. W. Hill
*General Petroleum Corporation**

THE control of physical properties and conditions by automatic devices is receiving an ever increasing attention in the gas and petroleum industries. Temperature, pressure flow, liquid level, humidity, speed or rate concentration and ratio, are among the variables to which controllers are now being applied. The objects of control are varied, including such factors as improved processing conditions, economical operation, dependable service, and accident prevention.

P. W. Hill

We are all familiar with different types of control equipment. Even in our homes we have temperature controls on ovens, hot water heaters and mechanical refrigerators.

There is a defiinte relationship between measurement and control. A condition must be measurable in order to be controlled. This does not mean that we must have a visual record in order to have control. For example, in a simple pressure regulator the deflection of the diaphragm is a measure of the pressure.

The control with which we are most familiar is accomplished by changes in flow rate. We have all heard various terms in connection with control work, such as "full throttling," "set point," "lag," "response," "capacity," "anticipating," etc. Some of these terms are synonymous, the usage varying with the type of equipment or the manufacturer. In order to define and illustrate these various terms we will take a very simple example. Let us visualize the domestic gas system consisting of a pressure regulator and piping to the various points of utilization. The purpose of this automatic controller or regulator is to furnish gas to the customers' appliances at a constant pressure, say 6 inches of water, in order that the burners may function properly. Thus we may say that the object of control in this instance is dependable service.

Next, we consider the manner in which this control is effected. Before any gas is turned on we find that the regulator valve is held open by a spring and as we admit gas to the system the pressure in the house piping increases. This increase in pressure is also transmitted to the diaphragm which "measures" the pressure by deflecting the spring in proportion to the increase in pressure. This motion is transmitted through suitable linkage to the valve which thus closes with the increased pressure. This motion is continued until the "set point" of 6 inches of water pressure is reached, at which time the pressure on the diaphragm is just balanced by the spring. In this way the condition "pressure" is controlled by throttling the flow.

Next let us consider what is meant by "throttling range." Assuming the upstream pressure to be constant, the maximum volume of gas which can pass through the regulator depends on the size of the orifice. Under these conditions the valve disc must be withdrawn completely from its seat. At minimum flow the disc must be right at the seat, and at any flow rate between, the valve must be at an appropriate distance. Since the valve must move with the diaphragm each flow rate necessarily must involve a different diaphragm position and hence a varying spring tension and balancing pressure. A test of a No. 1 house regulator at varying flow rates with a supply pressure of 5 pounds shows—

1 cu. ft. per hr.	9 in. water pressure
50 cu. ft. per hr.	7¼ in. water pressure
100 cu ft. per hr.	6¾ in. water pressure
200 cu. ft. per hr.	6 in. water pressure

Probably at some pressure such as 5½ inches it would be found that only the orifice was effective in restricting the flow and that any further valve travel did not affect the volume passing through. On this basis we might say that the "throttling range" of the regulator under these conditions was from 9 inches to 5½ inches pressure.

This brings us to "control point," also called "set point," which is the desired condition of control. From the foregoing description of throttling range it is obvious that for this case the control point will vary from 5½ inches to 9 inches, depending on the flow. By changing other factors, such as increasing the diaphragm size, we may be able to narrow down this throttling range, but theoretically at least there is no "control point" but only a narrow control range.

Referring now to the gas regulator in operation, we will assume that the water heater only has been consuming gas when suddenly the demand is increased by turning on the oven. The pressure on the piping, and hence on the regulator diaphragm, is lowered and the valve moves to a new position to permit an increased flow. Fortunately for gas regulation the reaction is almost instantaneous, but in many of our control problems it is much slower.

This brings us to a consideration of time as a factor in automatic control, and introduces the subject of time lag. Perhaps temperature is the condition in which lag is the most important. For the purpose of illustration let us visualize a tank in which water is being heated by a steam coil. We are to maintain the water at a definite temperature by means of a steam valve operated by a temperature control instrument. The rate of temperature rise is influenced by the amount of steam which can pass through the valve, and also by the volume of water to be heated. Assuming the valve size and steam pressure to be constant the rate of temperature change is inversely proportional to the mass to be heated. This factor has been termed the capacity lag, and might be defined as a function of the rate of change effected by a controller. To show the importance of this capacity lag let us assume that our hot water tank is very large with respect to demand, and is to be maintained at 140°F. plus or minus 1 degree. If the hot water is withdrawn at a slow rate we can see that the amount of steam necessary to hold the temperature will be small. Hence, we would not have to be very careful how we admitted the steam, provided the total amount of steam was correct over a period of time. The valve, thus, could entirely shut off more than half the time without seriously disturbing the temperature since a small volume of steam, or the lack of it, would not change the temperature of a large volume of water very much.

Conversely, if the size of our tank were relatively small, and the demand large, we would have to maintain a very close balance between the demand and supply, that is, between the rate at which hot water were withdrawn and the steam admitted, if we were to keep the temperature within the specified limits.

Another important time lag has been called the instrument lag or, as one writer puts it, the "controller period." In our hot water tank illustration this lag is represented by the time it takes for the sensitive element to reach the same temperature as the surrounding water after a charge, and by the interval before the controlled valve reacts by opening or closing. The influence of such a lag is to delay the reaction to a given change, which is usually detrimental to good control.

It is important for purposes of control to have the sensitive element located in the zone of control so that the effect of a changed controlled valve position can be detected as it occurs; otherwise a lag that is very difficult to overcome will occur. For example, to follow our hot water system let us assume that our thermometer bulb is located beyond the outlet and not in the tank. Then the time required for the instrument to respond to a change in temperature depends on the

* Presented before the Southern California Meter Association.

the rate of water withdrawal and there might easily be periods when the steam valve would remain open after the desired temperature had been reached.

We have discussed several time lags which apply in a general way to all types of control problems. In most instances, it is impossible to evaluate these factors. Usually all are present and influence one another so that experience and judgment are necessary in analyzing any particular problem. Another way of visualizing the influence of time lag is by remembering that automatic control cannot be truly anticipating, since a change in condition must exist before a correction can be made. If it were possible to make the proper correction simultaneously with the changed condition, most control would be simple, indeed, but it is this time lag which prevents us from reaching this ideal solution.

This brings us to consideration of the character of the demand, and the amount and rate of correction. Even in continuous flow processes there exist variations in demand or surges which a controller must cope with. If major variations in demand occur, it is important that the controller be able to meet each variation with the proper amount of correction, both as to amount and time. To illustrate, if a sudden demand lowered the temperature of our hot water system 1 degree we would not want our controller to respond with an amount of steam that would raise the temperature 2 degrees, for this would result in over-control.

Although factors have been discussed which affect automatic control, the successful application is difficult to predict. A few suggestions, however, may be offered. In attacking a control problem, we should first ascertain what it is that we expect the control to accomplish, the sensitivity required, and the allowable deviation from the set point. Next, we should consider the method of accomplishing this end by making an analysis of the process, trying to estimate the character of the demand and the extent of and nature of time lag. This may be done, sometimes, by operating the process by hand and observing the effect of variations on suitable indicating instruments. Then, armed with this information, although it cannot be evaluated in numerical units, we shall be better fitted to select equipment and to see that it operates satisfactorily.

E. S. Dickey Appointed Executive Representative of American Meter Co.

AMERICAN Meter Co. of New York, N. Y., has announced the appointment of E. S. Dickey as executive representative. Mr. Dickey was formerly manager of the Maryland Meter Works office in Baltimore, where he will maintain his present address.

This new post marks another step in the company's current program to perfect and strengthen its customers' service and sales organization simultaneously with modernization and consolidation of plant and manufacturing facilities.

The suspension of production activities in the Baltimore factory will enable Mr. Dickey to devote more of his time and interest to the active requirements of gas company customers.

E. S. Dickey

Mr. Dickey entered the meter business in 1889 as an apprentice with Dickey, Tansley & Co., predecessor to Maryland Meter Works. Between 1891 and 1896 he worked one year with the Pennsylvania Railroad Co., and for four years was with the Metropolitan Life Insurance Co.

When Maryland Meter Works was merged with American Meter Co. in 1896 he again entered the employ of that factory with various duties, both secretarial and in the field. In 1899 he became works manager in charge of production and in 1911 general manager of the company

He took a leading part in the development of the B type meter and also collaborated with the late George A. Lane, superintendent of meters, Peoples Gas Light & Coke Company, Chicago, in development of the double-diaphragm, large capacity C type meters.

During the past 35 years he has been active in gas industry association work. He was a member of the organizations which merged to form the present American Gas Association, and served on the first board of directors to the A.G.A. in 1919. From 1930 to 1931 he was chairman of the Manufacturers Section.

New Measurement Data Topic of Joint Meeting

CALIFORNIA Natural Gasoline Association acted as host to the Pacific Coast Gas Association and the Southern California Meter Association at a joint dinner session held on March 7 at the Richfield Café, Los Angeles. President H. L. Eggleston of the C.N.G.A. conducted the meeting, the chief purpose of which was to discuss changes in gas measurement procedure which will result from the new data developed in the report of the A.G.A.-A.S.M.E. Orifice Meter Committee. The new data are expected to be released to the industry through the Gas Measurement Committee of the A.G.A. Natural Gas Department at the Department's annual meeting in May.

William Moeller, Jr., president of the Pacific Coast Gas Association and a member of the A.G.A. Natural Gas Department Gas Measurement Committee, opened the discussion with a review of the development of large volume measurement of natural gas. He also outlined the course of the A.G.A.-A.S.M.E. investigation which has developed additional information concerning orifice meter coefficients.

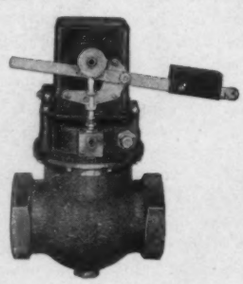
C. B. Heartwell, a past president of the Southern California Meter Association, next spoke on the need for changes in present measurement procedure, and indicated the principal directions in which changes would be called for by use of the new data.

Concluding the discussion, P. W. Hill, chairman of the C.N.G.A. Committee on Gas Measurement and also a past president of the S.C.M.A., spoke on fundamentals of measurement by orifice meter, with attention to practical steps in initiating the new measurement procedure.

Unusual entertainment was arranged for the meeting in an exhibition by the crack pistol team of the Los Angeles Police Department.

New Minneapolis-Honeywell Slow Opening Valve

THE Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has developed a new slow opening gas valve for use where slowness of operation through the opening cycle is required. The valve is sturdily constructed throughout and employs a power unit similar to that which has been in general use for a number of years on other types of the company's valve and motor equipment.



The time of opening is approximately 30 seconds, and of closing approximately 3 seconds. The motor operates valve through opening cycle and a 50-lb. external spring in holder located alongside of adapter rotates motor backwards to close the valve.

Provision is made for operating valves manually during a power failure period and an automatic recycling feature returns valve to command of controller when current service is restored. Complete specifications may be had by writing the company for Bulletin No. 7306.

J. C. Barnes Wins Adv. Competition

J. C. Barnes, advertising manager for New Orleans Public Service, Inc., has been adjudged the winner in the New Orleans Advertising Club prize competition for the outstanding advertising campaign appearing in New Orleans in 1934. Local department stores, agencies, and national advertisers located in New Orleans took part in the contest. Mr. Barnes submitted a series of four advertisements on appliances

Robertshaw Designs New Dial for Oven Control

An improvement in the design of its oven heat control dial is announced by the Robertshaw Thermostat Co. In appearance the new

dial is distinctive, combining the beauty of line and proportion characteristic of modern trends in gas range design.

The new Robertshaw dial can be recalibrated without removing any part of it from the thermostat. It is furnished in either conventional black and white or in various pastel tints to harmonize with prevailing tones in gas range finishes.

The new dial is being featured in the current Robertshaw advertising campaign, which starts in the Saturday Evening Post in March and continues through the spring season.

Benefits Listed on 5th Anniversary of P. G. and E. Natural Gas

Summing up the benefits derived from natural gas service since its introduction five years ago in the Pacific Gas and Electric Co. territory in northern and central California, the company's findings reveal that the change-over has saved consumers $8,000,000 a year in addition to improving home comfort and conveniences. Appliances sold in the P. G. and E. territory during the 5-year period total 122,122 gas ranges; 30,383 central furnaces and boilers; 28,437 floor furnaces; 16,611 radiant type heaters; 33,303 conversion burners; 62,737 automatic water heaters; 35,691 tank heaters; and 1700 radiators.

The prediction made by the Pacific Gas and Electric Co., when it invested $27,000,000 in more than 800 miles of transmission pipe lines in 1930, connecting with the Kettleman Hills field, that the new service would help create new industrial payrolls and maintain existing ones, has also been fulfilled.

Southern Union Holds Company Meetings During Dallas Conference

Southern Union Gas Co. brought 17 of its district managers, main line superintendents and town-plant managers from New Mexico properties to Dallas, Texas for the Southern Gas Association-Gas Sales Conference meetings, holding company conferences each morning prior to the convention sessions and again in the late afternoon following the sessions. Two luncheon meetings were held by the group during the Convention together with an all day meeting held the day following the convention.

Hazards from Natural Gas Leaks?

(Continued from Page 15)

exposed to gas. They entered suddenly, from normal atmosphere, into a relatively high concentration of gas. All very soon experienced a feeling of mild intoxication, with slight tightening or drawn feeling of the cheeks and lips which persisted throughout the test period. A slightly sweetish taste and odor was observed at first, reminiscent of surgical anaesthetic. Subjects were pale during the first part of the test, but later assumed normal facial color. There were no symptoms of gasping or desire to breathe more rapidly. The time was spent in reading, and playing cards and chess, and normal mental concentration and skilled movements was entirely possible. Subjects were seated during most of the test, except that during the last 10 minutes one walked up and down in a manner corresponding to mild exertion and causing slightly accelerated breathing; this activity did not produce any new sensation. The odorant was very noticeable at the beginning of the test and observable throughout, but in no way objectionable. There was at no time any feeling of sickness, headache or nausea, and all subjects agreed that they could have stayed in the room for a considerably longer period. On coming out into the normal air there was no unusual sensation other than a temporary return of the "sweet" taste, and all subjects were immediately "sober" and able to walk a straight line in a steady manner. The test was concluded 15 minutes before noon, and all subjects had a good appetite for lunch, felt no unusual effects in the afternoon or evening, and slept well at night. From the date of the test, (January 14, 1935) to this date of writing (March 1, 1935) all subjects have felt entirely normal and are convinced that they have experienced neither mental nor physical harm as a result of the exposure.

Conclusions: It is concluded from this test that natural gas, even if present in amount sufficient to lower the oxygen content of the atmosphere 32 per cent below normal, is entirely harmless to the human system.

Change-Over to 800 B.t.u. Gas Begun in Minneapolis, Minn.

Change-over from 550 B.t.u. manufactured gas to 800 B.t.u. mixed gas began in Minneapolis, Minn., February 4, according to J. K. Swanson, vice-president and general manager of the Minneapolis Gas Light Co., serving the city. Minneapolis and adjoining suburbs have been divided into 20 districts, with an average of 5,500 customers in each, and 300 men, divided into crews, have been added to the company's payroll for the work of changing over appliances to the use of the new mixture.

D. C. Shaffer Resigns Vice-Presidency of Memphis Natural Gas Co.

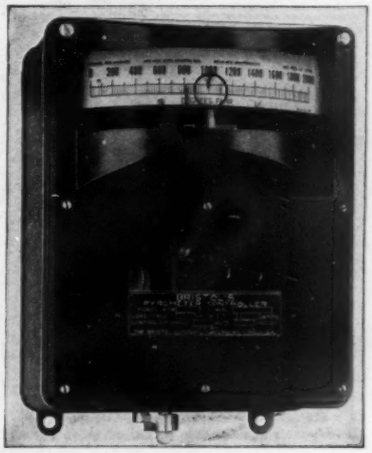
D. C. Shaffer, vice-president and general manager of the Memphis (Tenn.) Natural Gas Co. since natural gas was turned into the company's distributing system six years ago, has resigned his position to become active in oil and gas production. No successor will be appointed to fill the vacancy made by Mr. Shaffer, according to Milton S. Binswanger, chairman of the board of directors. Former department associates will carry on the work which has been under the direction of Mr. Shaffer.

Added Facilities Double Capacity At Cape Girardeau Plant

Additional gas making machinery consisting of a carbureted water gas set, which will duplicate the unit now in operation in the Missouri Utilities Co. Cape Girardeau gas plant, is being installed to increase the capacity of the plant and insure continuity of service. The additional facilities are part of an expansion program recently announced by R. G. Taber, president and H. B. Newman, vice-president of the company headquartering in St. Louis, Mo.

Bristol Announces Development of Pyrometer Controller

A new pyrometer controller, Model 478, has been developed by the Bristol Co. of Waterbury, Conn. The mercury-to-mercury

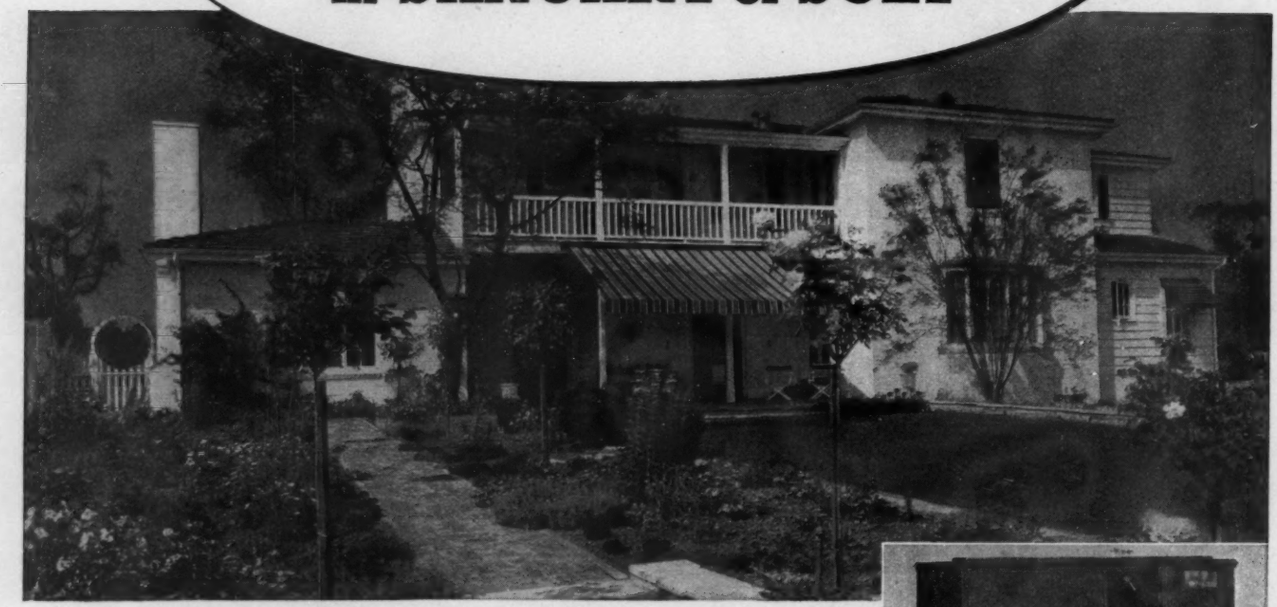


electric contacts of the new instrument are sealed in glass and are non-arcing and non-oxidizing. Special features of the equipment pointed out by the manufacturer include the visible operating mechanism, and accessibility of the telechron motor, mercury switches and terminal block, which simplifies field inspection without exposing the control mechanism to dirt, fumes or misalignment.

Civil Service Examination Opens

The U. S. Civil Service Commission announces an open competitive examination for the position of assistant mineral economist at an annual salary of $2600. Applications should be made to the Bureau of Mines, Department of the Interior, and must be filed with the U. S. Civil Service Commission, Washington, D. C., by April 1, 1935.

COMFORTABLE
in JANUARY or JULY



HOME OF MRS. A. M. UPSHUR... SAN MARINO, CALIFORNIA

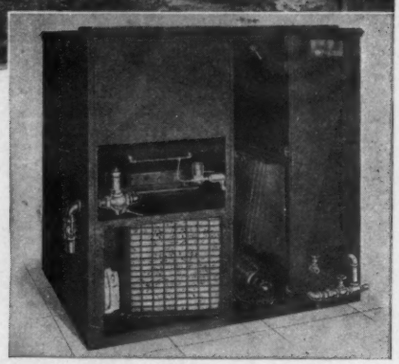
Architect—Gerard Colcord
General Contractor—Wm. C. Warmington
Plumbing Contractor—H. G. Cary Company
Heating System—Engineered and Installed by Payne Furnace & Supply Co.

This new California-Colonial house possesses charm, quiet dignity and more: year-around comfort and convenience, assured by the modern fuel, Gas.

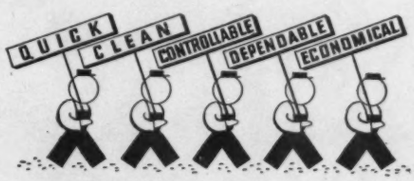
With automatic gas heating is combined humidifying and air-filtering, as well as provision for summer cooling.

Two gas automatic storage water-heaters, with a combined capacity of 85 gallons, furnish instant, abundant hot water, day or night.

To the architect—credit for foresight and sound judgement in combining modern comfort with artistry and charm. To the owner—assurance of complete and lasting satisfaction.



Combination Unit, cut away to show (left) heating, humidifying and air filtering equipment; (right) method of installing summer cooling device, for same distributing system.



Gas, for heating, cooking, water-heating and refrigeration, offers a combination of advantages available in no other fuel. Architects and owners are invited to review their plans for modernization or new construction with the Gas Company's Industrial Engineers. There is no charge for this technical service.

PACIFIC COAST GAS ASSOCIATION, INC.
(A non-profit service organization of which your Gas Company is a member)
447 SUTTER STREET . . . . . SAN FRANCISCO

Gas
The modern fuel

Interest High at Spring Meeting of P. C. G. A. Technical Section

THE Spring Technical Conference of the Pacific Coast Gas Association was held in the auditorium of the Los Angeles Gas and Electric Corp. Building, 810 South Flower Street, Los Angeles, on March 7 and 8. Approximately 100 delegates were in attendance, and the sessions were outstanding in value and interest of papers presented.

A. R. Bailey, chairman of the Technical Section, opened the meeting by presenting President Wm. Moeller Jr., who welcomed the delegates. P. E. Beckman, chairman of the Natural Gas Transmission Committee, then took the chair and introduced A. B. Allyne, chairman of the Pipe Protection Sub-Committee. Mr. Allyne read a progress report outlining the status of the questionnaire on pipe reconditioning, and the projected work on pipe sample burial ground inspections, and then called on J. F. Brennan for his paper on "A Mathematical Theory of Corrosion." This paper developed equations and curves showing how the rate of pitting decreases with time.

B. A. Williamson then presented a discussion on "Electrolysis Switches," describing the six switches in use or available.

W. R. Schneider contributed a paper on "Electrolysis of Oil Well Casings Connected to Surface Pipe Networks," describing conditions found in the Kettleman Hills Area, of considerable flow of electric current into the wells from the pipe lines. Discussion followed of the legal responsibility involved in a pipe carrying destructive current to a connected structure.

F. A. Hough, chairman of the Internal Corrosion and Dehydration Sub-Committee, stated in his progress report that the active interest in internal corrosion, dating from 1932, has resulted in the installation of refrigeration and atmospheric cooling equipment on transmission lines, which equipment apparently successfully prevents water condensation and therefore eliminates corrosion; that the sub-committee is limiting its activities to the collection of operating data on such installations. B. M. Laulhere then read a paper on "Scrubbers and Dust Traps", describing a type of dust scrubber and/or liquid separator developed by the Southern California Gas Co.; the essential features of this device, to prevent liquid entrainment, are decreasing velocity together with baffling, and a final sharp change in direction with a linear velocity not in excess of 600 feet per minute at 30 lbs. gauge pressure.

The session then adjourned and Clifford Johnstone entertained, at a semi-business luncheon at the Jonathan Club, a group interested in new procedure and standardization of gas heating value determinations and cooperation with the American Petroleum Institute, which organization is similarly interested.

The afternoon session started with "Compressor Plants" under the chairmanship of Grove Lawrence. Mr. Lawrence gave a general progress report, and then called on S. C. Donaldson to describe the proposed Compressor Plant Manual. Discussion was had relative to the scope and contents of this manual.

New Orifice Meter Data Discussed

The remainder of the afternoon was devoted to discussion of the Tentative Report of the Joint A.G.A.-A.S.M.E. Orifice Meter Committee to the Gas Measurement Committee of the Natural Gas Department, A.G.A., the effect these new data would have on gas measurement, and the manner and extent to which cooperation should be given to the Southern California Meter Association and the California Natural Gasoline Association, with respect to revision of the latter organization's manual on Gas Measurement. President Moeller opened the subject with a brief history of the development of large volume gas measurement within the gas industry, and a description of the various series of tests and determinations leading up to the latest work on which the A.G.A.-A.S.M.E. Report is based. Mr. Hough then described the changes that have been made between the old and new formulae, and the changes brought about by introduction, into the coefficient, of viscosity, Reynolds' number factor and expansion factor; he stated that the problem appears to be one of simplification to the point where practical usage can be made. Mr. Beckman then compared the old and new coefficients, showing the influence of the various factors upon quantities measured. Considerable discussion followed; it was suggested that a P.C.G.A. committee be formed, two members of which would also be on a joint committee with two representatives each from the S.C.M.A. and C.N.G.A.

The meeting then adjourned for the day, but many members attended the evening joint meeting of the C.N.G.A. and S.C.M.A. in the cafeteria of the Richfield Building, reported elsewhere in this issue.

The meeting re-opened next morning under H. W. Geyer, chairman of the Utilization Committee. R. C. Terradell, chairman of the Sub-Committee on "Field Equipment and Training of Service Men" described his organization. It is proposed to develop a standard kit of tools for service men, and to pursue training along mechanical and customer contact lines. Also, a questionnaire is being sent to all companies to ascertain successful procedures.

Frank Wills, chairman of the Appliance Installation Standards Sub-Committee, described the work of the sub-committee as setting up standards for correct, safe and efficient installation of appliances; these stand-

ON THE OPPOSITE PAGE

As a part of the Pacific Coast Gas Association's advertising and publicity program in support of gas industry sales efforts, advertisements, such as the one reproduced on the opposite page, have appeared, and are appearing, regularly in such important trade journals as: Architect & Engineer, California Arts & Architecture, Southwest Builder & Contractor and Daily Pacific Builder.

The P.C.G.A. for over 5 years has carried on its cooperative load-building program, which during 1935 is employing leading trade journals in nine important industries.

Calendar

March

Pacific Coast Gas Association Spring Technical Conference—Los Angeles Gas and Electric Corp. Auditorium, Los Angeles, Calif., March 7-8.

Oklahoma Utilities Association—17th Annual Convention, Biltmore Hotel, Oklahoma City, Okla., March 12-13.

Pacific Coast Gas Association Spring Sales Conference — Commercial and Manufacturing Sections. Los Angeles Gas and Electric Corp. Auditorium, Los Angeles, Calif., March 14-15.

April

American Chemical Society — Semi-Annual Meeting, New York, N. Y., April 11-13.

Mid-West Gas Association—30th Annual Convention, Hotel Fontenelle, Omaha, Neb., April 15-17.

Southwestern Gas Measurement Short Course—University of Oklahoma, Norman, Okla., April 23-25.

Missouri Association of Public Utilities—Annual Convention, President Hotel, Kansas City, Mo., April 25-26.

May

Natural Gasoline Association of America—Annual Convention, Hotel Tulsa, Tulsa, Okla., May 1-3.

A. G. A. Annual Distribution Conference—Cleveland Hotel, Cleveland, Ohio, May 2-4.

A. G. A. Natural Gas Department—Hotel Peabody, Memphis, Tenn., May 6-9.

A. G. A. Joint Conference of the Production and Chemical Committees—Hotel New Yorker, New York, N. Y., May 13-14.

American Institute of Chemical Engineers—Wilmington, Dela., May 13-15.

June

Canadian Gas Association—Annual Convention, Montreal, Quebec, Canada, June 10-11.

American Society of Mechanical Engineers—Semi-Annual Meeting, Hotel Gibson, Cincinnati, Ohio, June 19-21.

American Home Economics Association—Annual Meeting, Chicago, Ill., June 24-28.

October

American Gas Association—Atlantic City, N. J., October 14-18.

November

American Petroleum Institute—16th Annual Meeting, Biltmore Hotel, Los Angeles, Calif., November 11-14.

Mid-West Gas School and Conference—Iowa State College, Ames, Iowa.

ards to be made available to civic bodies desiring to draw up building codes, ordinances, etc.

R. U. Fitting, chairman of the Current Literature Abstracts Sub-Committee, pointed out the difficulties and expenses that might be involved in literature abstracting work, and it was decided that the first step should be the investigation of ways and means.

H. N. Johnson, in a paper on "Leakage of Valves and Hose Cocks" showed that it would be more economical to install new cocks than to re-grease old ones. Repeat calls on re-greasing jobs cost 65c, considerably more than the cost of a new cock.

C. A. Renz, in a paper on "Life of Water Heaters", disclosed considerable variance in life, and showed that less than 2 per cent failure could be expected in five years.

Guy Corfield read a paper on "Tests on Exposure of Persons to Natural Gas" which will be found on another page of this issue.

N. L. Hoff, chairman of the Distribution Committee, then took the chair, introduced C. A. Renz, chairman of the Safe Gas Distribution Sub-Committee. Mr. Renz in turn presented Oscar Cook, who delivered a paper on "Leaks on Consumers' Premises and Their Investigation". This paper showed that, with respect to leak complaints, 35 per cent were "no leak", and 28 per cent were "too small to register"; that apparently too much attention is given to leak orders, which might be handled as "better service orders."

The meeting adjourned for a fellowship luncheon in the cafeteria adjacent to the auditorium, and then resumed with the subcommittee report, by M. T. Burton, on "Optimum Odorant Concentration." This was followed by a progress report, by Otto Goldkamp, of the sub-committee on Devices, Contrivances, and Novelties. Ways and means of collecting this information were discussed, and it was suggested by President Moeller that the Association might give financial assistance if the material was worthwhile but the reproduction expense formidable.

A progress report was next read by Guy Corfield of the sub-committee on "The Effect of Humidity on Meter Proof", in which it was shown that gas humidity has a definite influence on the area of meter leather and the proof of meters equipped with such leather.

C. Eldon White then gave a paper on "Microscopic Detection of Metallic Ions", describing original work whereby procedure and standards have been developed for the identification of components, in very small samples of unknown substances, by the use of low power microscope.

The meeting was then adjourned back to A. R. Bailey, who announced the appointment of F. A. Hough as chairman of the committee on Gas Measurement, to deal with the A.G.A.-A.S.M.E. Orifice Meter Report; and the appointment of Guy Corfield as chairman of the committee on Determination of Heating Value of Gas. Mr. Bailey then thanked all contributors and delegates, and adjourned the meeting.

Electrogas

FLOOR FURNACES

NEW LOW PRICES

now available on the famous ELECTROGAS FLOOR FURNACES. These prices are the lowest ever offered, and are created to make it especially worth your while to sell Electrogas heating in line with the Federal Government's plan of home modernization.

ALSO AVAILABLE IMPROVED LINES OF "STREAMLINED" BASEMENT FURNACES.

BLOWERS FILTERS
AIR WASHERS

BUILT-IN
FURNACE—BLOWER—FILTER
UNITS

Write for details.

ELECTROGAS FURNACE & MFG. CO.

2575 Bayshore, San Francisco
164 South Central, Los Angeles

Lindewelding Covered in New Film Release

The Linde Air Products Co., New York, N. Y., has announced a new film release entitled "The Multi-Flame Lindewelding Head" which graphically describes the company's recently introduced method of pipe line welding. The film is available for industrial and school showings in 16 mm. size, free of charge. Details may be had upon application to the company. Filmed for the most part in the midwest, the scenes comprise work on new pipe lines that were completed in record time.

Details of construction of the multi-flame blowpipe head are briefly explained and correct technique of manipulating the blowpipe and welding rod is fully covered.

Unusual telephoto scenes show action of the welding and preheating flames during the welding operation, and the proper control of the puddle.

Mitchell Appointed First Instructor of Natural Gas Course

R. C. Mitchell has been appointed as first instructor for the Home Study Course on Natural Gas of the University of Kansas. Mr. Mitchell's duties will come under the personal supervision of Prof. C. M. Young, professor of mining engineering, author of the course.

A former graduate of the School of Engineering at the University of Kansas, Mr. Mitchell has had several years' experience as an oil and gas engineer, and for the past six years was with the Standard Oil Co. of New Jersey in India and South China.

MODERN METHODS AND MATERIALS

A letter to WESTERN GAS will bring you any of the selected reference bulletins listed below, without cost. Indicate by number which you desire.

NO. 52—AFTERCOOLERS

Bulletin on various types of aftercoolers and application to compressor plant conditions. 12 pages, with diagrams and cutaway illustrations.

NO. 53—CONTROL EQUIPMENT

Specifications for 23 control equipment items, including room thermostats; humidity regulators; water, gas and oil valves; etc. Illustrations of each model.

NO. 54—STAINLESS STEEL

Line of stainless steels described, with information on physical properties, characteristics for riveting, welding, soldering, brazing, machining, etc. Laboratory corrosion data. 20 pages, illustrated.

NO. 55—ELECTRIC WELD PIPE

A 64-page booklet of engineering data on line of electric weld casing and tubing products, with recommended setting depths and bursting pressures for various sizes and grades.

NO. 56—TABLE-TOP RANGE

A 30-page sales portfolio announcing new table-top series gas range, with comprehensive sales plan. Typical sales talks and a sales skit; suggested letters to prospects; enclosures of newspaper advertising, consumer folders, special letterheads, display pieces, and other promotional material.

NO. 57—VALVES

Variety of valves and related products described with specifications, diagrams and price information on each. Included are check, disc, globe, pressure indicator, plug and needle valves; gas and air mixture tees, manifolds, etc. 56 pages.

NO. 58—BOOK ON WELDING

New welding process described. Subjects discussed include welding of galvanized steel, copper, and cast iron, building up on steel, cast iron, bronze or brass.

NO. 59—SOLVENT

Bulletin on new solvent for use in distribution systems for control of naphthalene, gum, corrosion, etc. Use of product for recovery of light oil or natural gasoline also described with flow diagrams. 32 pages.

NO. 60—COMBUSTION CONTROL

New type automatic combustion control described in 24-page catalogue. Individual diagrams for 13 separate control arrangements; also diagrams for installation of damper mechanism, and several wiring diagrams.

Never Before

An Automatic Gas Water Heater

CAMPAIGN

Like This!

April finds the water heater industry banded together in what promises to be the most successful campaign they have ever held. And April finds the P. G. and E. doing its part.

Take a look at some of the special features of this campaign and you won't wonder that we predict a smashing success:

(1) A new Financing Plan—lowest, easiest terms ever offered. (2) Newspaper advertising at 1/3 off (P. G. & E. making up the difference). (3) Strong manufacturer support. (4) Six big promotional advertisements in 250 newspapers. (5) Newspaper publicity stories. (6) Billboards everywhere the P. G. and E. sells gas. (7) Two truck banners each on 599 trucks and service cars. (8) Billstickers on half a million bills.

Just think of being able to offer terms of $3.00 down and $3.00 a month on any job from $60.00 up . . . and being able to advertise such a value for 1/3 less than you would ordinarily pay!

Now you can save those sales that might have been lost because of too-high payments. And at the same time you can "sell up" from those cheap jobs that yield but meager profits.

If ever a water heater campaign had *everything*—— this is it! Let's go!

PACIFIC GAS AND ELECTRIC COMPANY

P·G·and E·

Owned · Operated · Managed
by Californians

WG291-335

A DEMAND

MORE Illustrations

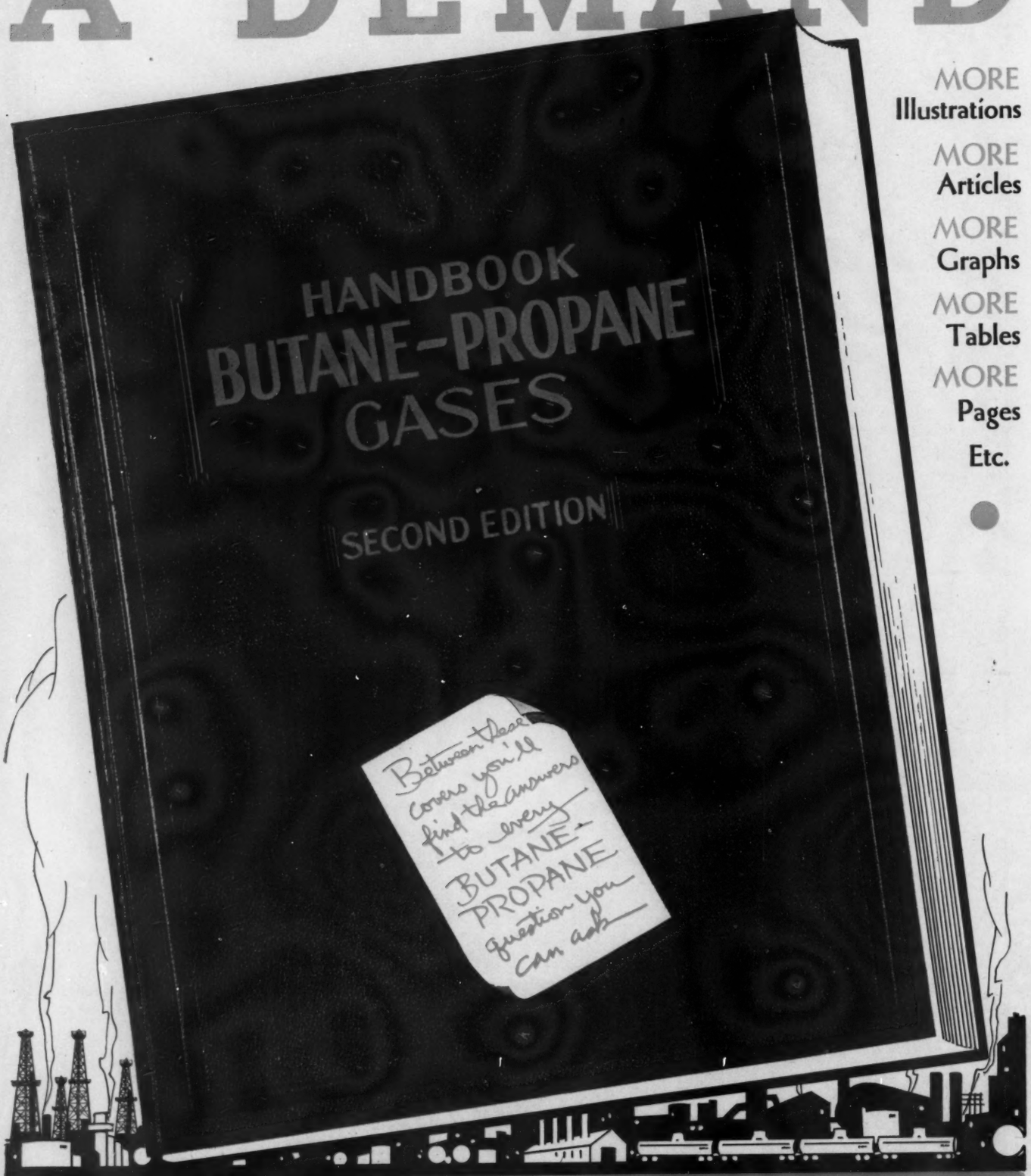
MORE Articles

MORE Graphs

MORE Tables

MORE Pages

Etc.



THE ONLY PUBLICATION OF ITS KIND —COMPLETELY COVERS BUTANE-PROPANE

ANSWERED

2nd EDITION

NOW READY — DETAILING THE REVOLUTIONARY DEVELOPMENTS OF THE PAST TWO YEARS!

This Table of Authoritative Contents Speaks for Itself!

SUMMARY OF DEVELOPMENTS: Brief review of progress during past two years since publication of first edition, including foreign expansion, new industrial uses, new manufacturing sources, new plant and equipment design, etc.

USE IN INTERNAL COMBUSTION ENGINES: A comprehensive discussion of liquefied petroleum gases in this important new use including engine design, comparison of propane and butane with other fuels, use in stationary engines, block testing automotive engines; use in rail cars, trains and locomotives; use in automotive engines; refrigerator cars and trucks; dirigibles and aeroplanes; utilization equipment such as carburetors and mixers, vaporizers, fuel tanks, valves and fittings, etc.; consideration of safety in relation to internal combustion engine use of these gases.

DESIGN AND INSTALLATION OF STORAGE: A fundamental chapter devoted to safe design of storage tanks. Application of the recently adopted A.P.I.-A.S.M.E. Code is thoroughly covered, and reference made to other pertinent regulations, including those of the National Fire Protection Association, the Industrial Accident Commission of California, and others. Discussion of special design problems is included, treating such phases as design of heads, reinforcement of openings, design of skid tanks, emergency relief provisions. Concluding the chapter is a valuable reminder list of essential precautions to observe in ordering storage tanks.

SUPPLY FROM PETROLEUM REFINERIES: Characteristics of refinery gases with reference to liquefied gas production. Detailed discussion of oil absorption and compression processes for liquefied gas recovery; fractionating columns; extraction of ethane from refinery vapor.

ENGINEERING DATA ON THE LOWER OLEFINS: A basic reference chapter consisting of tables on properties of liquefied petroleum gases produced from petroleum refineries—a companion chapter to that in the original Handbook on properties of the natural-gas-produced liquefied petroleum gases.

DOMESTIC APPLIANCE TESTING AND UTILIZATION: Separate discussions of undiluted and carbureted gases from the standpoint of their burning characteristics. Appliance testing procedure on liquefied petroleum gases, with special reference to American Gas Association methods. Fundamentals of appliance design for proper use of these gases. Latest A. G. A. Laboratory Approval requirements. Standards of construction and performance for gas appliance accessories.

ECONOMIC COMPARISONS WITH COAL, OIL, ELECTRICITY, PRODUCER GAS, MANUFACTURED GAS: Introductory section on requirements of a good fuel, available heat of gases, a list of applications for liquefied petroleum gases, relative advantages of propane and butane. A number of ready-reference charts show cost comparisons with other fuels as well as with electricity. Domestic, commercial and industrial comparisons are made in connection with each competitive fuel, and numerous tables present competing fuel cost data for special uses.

TOWN PLANTS: A new chapter combining discussion of butane-air and undiluted types of plants. Written from a practical operating standpoint and giving summarizing comment on a survey which covered every town plant now in operation. New types of plant equipment, and discussion of over-all plant design. Introductory section treats such pre-construction considerations as estimating market, sendout peak loads; plant location, plant structures. Major subject heads are: liquid storage, vaporization, undiluted plants air-mix plants (including description of various types of mixers), gas storage, distribution (system design, odorization, dehydration, conversion, etc.). The operating experience summary which concludes the chapter covers plant and distribution problems, consumer complaints, liquid cost, rates, classification of sales, collection experience, and minimum number of customers required to maintain a central plant property. Flow diagrams and many illustrations.

MANUFACTURE FROM NATURAL GAS: A new chapter dealing with the natural gasoline plant process, with special reference to operations involved in liquefied gas recovery. Flow diagrams assist in presentation of plant processes.

SPECIAL USES: Orchard heating, construction camp use, and various special applications such as cutting and welding.

VOLUME CORRECTION FACTORS: A series of original tables for temperature-volume corrections, ranging from 100° to 149° A.P.I. gravity, and from 20° to 119° F. Tables read both in degrees A.P.I. and specific gravity at 60° F. Also tables for converting specific gravity to degrees A.P.I., and vice versa. Preliminary discussion explains use of tables.

SUPPLEMENTS AND REVISIONS

A number of chapters in the first edition have been retained for the second edition, with additions and modifications made by their original authors to bring them in line with present knowledge. Late information is found in the Handbook on:

TRANSPORTATION: New material on motor truck and trailer design, describing typical equipment in use, pumps for loading and unloading, etc., current railway freight rates; requirements for shipping by water, etc.

USE WITH OTHER GASES: An added section on standby gas, also further discussion of reforming, use of propane for underfiring coke ovens, and use of butane or propane with coal gas under peak load conditions.

ANALYSIS AND TESTING: Specifications for commercial grades, test procedure for determination of specific gravity, water content, vapor pressure, etc. Detailed outline of analytical procedures for various gases and with various apparatus. The above and other additions have been made to the chapter on Composition and Analytical Determination.

PROPERTIES OF MIXTURES: Additional curves are included, among them those on dew points of butane, propane, and typical mixtures, carbureted with air; curves showing relation between B.t.u. and specific gravity.

BOTTLED GAS DISTRIBUTION: This chapter has been brought up to date, with sections on foreign sale of bottled gas, present trends in bottled gas merchandising, new types of service equipment being developed, design of propane bulk plants.

BIBLIOGRAPHY: This valuable feature of the first edition has been extended to list worthwhile material published during the past two years.

CENTRAL PLANT DIRECTORY: A new directory listing all town plants as well as semi-permanent plants on large construction projects; gives information secured directly from the companies on plant location, number of meters, type of service, plant capacity, rates, etc.

CATALOGUE SECTION: Current detailed engineering information on the many products now manufactured for service on butane and propane.

BUYERS' GUIDE: Revised commodity listings of firms supplying equipment, appliances, services for the liquefied petroleum gas industry.

SEND FOR IT TODAY!

Here's a Handy "ON-APPROVAL" Coupon

WESTERN GAS,
810 South Spring St., Los Angeles, Calif.

Send me the Handbook of Butane-Propane Gases (**Second Edition**), for 10 days' examination subject to approval or return. Within 10 days of receipt I will send $5.00, plus a few cents for postage and delivery, or return the book postpaid. (We pay postage on orders accompanied by remittance.)

Name.....Position.....

Company.....

Address.....City and State.....

Check for $.....enclosed. Date.....

(Books sent on approval in U. S. and Canada only.)

Rental-Purchase Plan on Automatic Water Heaters

FIVE hundred plumbing contractors in the city of Chicago will benefit from the announcement made February 1 by The Peoples Gas Light and Coke Co. concerning a rental-purchase plan for the sale of automatic water heaters to residential customers.

This measure, the latest step in the cooperative program advanced by Peoples Gas to encourage sound merchandising on the part of outside agencies, is shared in by 12 manufacturers who are helping to negotiate the plan.

The rental-purchase plan, which goes a step farther than the deferred-payment measure inaugurated by the company in April, 1934, anticipates the sale of 10,000 automatic water heaters. It is based essentially on the customer's option to buy the water heater that has been installed on a rental basis, at any time during the life of the contract.

All plumbing contractors who represent one of the 12 cooperating manufacturers can participate in the plan, installing water heaters in the homes of residential customers on rental-purchase contracts calling for as low a payment as $1.10 a month. Small down-payments range upward from $1.00. Monthly payments are based on 1/60 of the remaining balance.

In buying the heater any time during the life of the contract the customer receives full credit for all rental payments. When the balance due is paid up in cash a 10 per cent discount on the unpaid balance is allowed.

All water heaters are sold at the manufacturer's established cash price plus a finance charge of 15 per cent.

After a contract has been negotiated by the plumbing contractor and is approved by both the manufacturer and the gas company, the manufacturer whose appliance is sold, pays the contractor a commission of 15 per cent for making the sale, also for the installation and the cost of the city permit.

Installation and permit charges are not to run more than $20.00 for a heater with a storage capacity of 35 gallons or less; $25.00 for heater with storage capacity of 30 gallons or more; $25.00 for instantaneous automatic water heaters. If the cost of installation and city permit should run greater than these amounts the plumbing contractor collects the difference from the customer.

After approving the credit of the customer the gas company bills the purchaser on the regular monthly gas bill.

The gas company pays a 20 per cent bonus, based on the manufacturer's established cash price, on all sales of automatic water heaters that are not financed or billed by the company and that are to be installed within the city limits of Chicago.

The schedule of commissions covers only automatic storage water heaters having an input rating of not more than 75,000 B.t.u. per hour, and automatic instantaneous water heaters having an input rating of not more than 120,000 B.t.u. per hour. Where sales of instantaneous water heaters of larger capacity are made by the plumbing contractors for cash or deferred sales, not financed by the gas company, a 10 per cent bonus will be paid to the contractor by the company.

For all heaters sold by The Peoples Gas Light and Coke Co. a licensed plumbing contractor will be called to make the installation, being paid for the work on the usual time and material basis.

All payments of commissions by the manufacturer or by the gas company are based on the sale being made in good faith and upon the appliance remaining in service. If the use of the heater is discontinued or if it is removed within three months from the date of installation all commissions or bonuses will be charged back to the plumbing contractor.

The 12 manufacturers who are sharing in the program are: The American Gas Products Corp., Crane Co., Everhot Heater Co., Handley Brown Heater Co., Hoffman Gas & Electric Heater Co., Hotstream Heater Co., The Lovekin Water Heater Co., John Wood Manufacturing Co., Pittsburg Water Heater Co., Surface Combustion Corp., Ruud Manufacturing Co. and Welsbach Co.

The Peoples Gas Light and Coke Co. has prepared special contract forms for taking orders on the rental-purchase plan. These are furnished to the plumbing contractor by any of the cooperating manufacturers or by the gas company.

Advertising will have a major place in promoting the sale of the heaters. Definite announcements cannot be made as to the extent of this advertising at present, but it will include the use of down-town and community newspapers and the radio.

T. V. Purcell is vice-president in charge of sales for the Peoples Gas Light and Coke Co., W. R. Evans is new business manager, and C. H. Light has charge of water heater sales.

Memphis Power & Light Co. Announces New Promotions

J. J. Brennan, commercial manager of the Memphis Power & Light Co., has been appointed assistant to W. N. Ford, vice-president and assistant general manager of the company.

W. H. McInnis, residential sales manager, has been made general sales manager, heading up the entire new business department, operating under Mr. Ford. R. C. Anderson, formerly of the Mississippi Power & Light Co., has been made residential sales manager, to succeed Mr. McInnis.

U. S. Pipe Has New Adv. Manager

United States Pipe & Foundry Co., Burlington, N. J., has announced the appointment of Ralph M. Shaw, Jr., as advertising manager to succeed Sidney E. Linderman, now in charge of the sales office at Washington, D. C. Mr. Shaw was formerly editor of the company's house organ, the "Piper."

METAL-BESTOS GAS VENT *and* FLUE PIPE

The Superiority of this Aluminum Lined Pipe over all other types of commonly used Gas Vent Pipe has won for it

NATIONAL ACCEPTANCE

■ Trial Installations will prove its Higher Efficiency, Safety, and Lower Installed Cost.

■ Tests Against Deterioration by Heat and Acids Prove an Indefinite Life.

Write for Descriptive Catalogue and Price List

MANUFACTURED BY

PAYNE FURNACE & SUPPLY Co.

BEVERLY HILLS CALIFORNIA

REFRACTORIES

GENERAL CERAMICS COMPANY

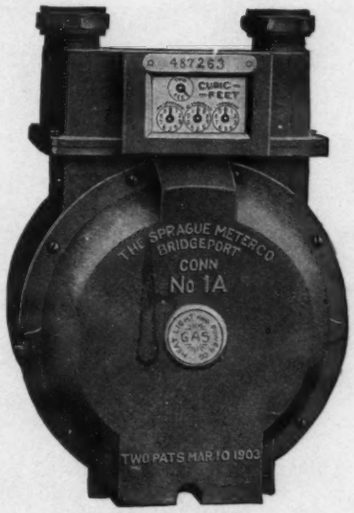
· REFRACTORIES ·

For Conversion Burners, Circulating Heaters, etc.

Because they are uniformly accurate, strong, and dependable in every way, General Ceramics Refractories are used by most of the leading manufacturers of gas heating appliances. ● Our engineers will gladly cooperate with you.

General Ceramics Company, 30 Rockefeller Plaza, New York

"MODERNIZE as you repair"



THE SPRAGUE METER COMPANY

BRIDGEPORT, CONN.

Los Angeles, Calif. San Francisco, Calif.

Davenport, Iowa. Houston, Texas.

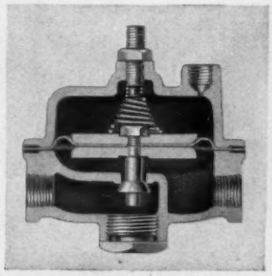
Reliable!

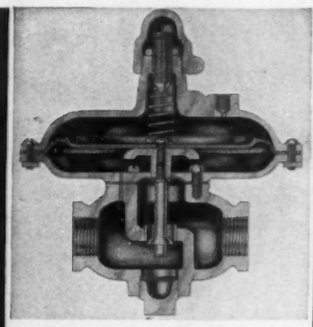
REYNOLDS Low Pressure Regulators assure you of uniform delivery pressure even though the volume varies and the line pressure fluctuates. These units illustrated below are precision built and delicately balanced for accurate performance on low pressure installations.

The factory test through a range of operating conditions is the manufacturer's pledge that the units are satisfactory, but the thousands in operation after years of service, is the proof that Reynolds Low Pressure Regulators are reliable, safe and economical. Section 3 of Catalog L, giving complete data on Reynolds Low Pressure and Appliance Type Regulators, is ready... Write.

REYNOLDS offer complete, co-operative service of their Engineering Department in working out Gas Control problems. Use this service, it's free.

Below, a cross-sectional view of R-10070-El.





Above, a cross-sectional view of Low Pressure Regulator.

Reynolds Branch Offices:
421 Dwight Bldg.
Kansas City, Missouri

2nd Unit, Santa Fe Bldg.
Dallas, Texas

Representatives:
Eastern Appliance Co.
Boston, Mass.

F. E. Newberry
Avon, New Jersey

G. H. Unkefer
428 Boyd St.
Los Angeles, Calif.

Regulator R-10016-El, was designed for use on automatic gas stoves and affords an unusually compact installation. It is similar in design to R-10070-El but of greater capacity. Recommended for maximum inlet pressure of one pound reducing to inches W. C.

Regulator R-10070-El, a member of the R-10070 Series, primarily designed for use on gas refrigerators, but unbeatable for any installation where accurate pressure control of small volume is required.

REYNOLDS GAS REGULATOR CO.

ANDERSON, INDIANA, U. S. A.

GAS CONTROL SINCE 1892

Think of our facilities
as your instrument department

It often happens that the Bristol's Recorders you installed years ago are required today to measure temperatures or pressures under changed conditions and within different working ranges. This calls for re-modeling or re-standardizing that our West Coast Service Laboratory and Assembly Plant is in a position to do promptly, correctly and inexpensively.

Play safe and use our facilities as *your* instrument department.

Just pack recorders carefully and ship direct to The Bristol Company, 311 Minna St., San Francisco. Also send shipping notice and order authorizing work.

THE BRISTOL COMPANY

Rialto Bldg., San Francisco . . . 747 Warehouse St., Los Angeles
Branch Factory: 311 Minna St., San Francisco

Bristol's West Coast Service Laboratory and Assembly Plant

BRISTOL'S

TRADE MARK REG. U. S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889

MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Evenflow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and similar equipment. Write for description and prices.

MUELLER CO., Decatur, Ill.

Factories: Decatur, Ill.; Chattanooga, Tenn., Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco.

The Goodman Stopper

GOODMAN — USED SINCE 1897 — 2" HANDLE & LOCKING SLEEVE — GAS MAIN STOPPER

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

Pac. Coast Rep.: C. B. Babcock Co.
135 Bluxome Street
San Francisco, California

NRA — U.S. — WE DO OUR PART

Welding Summary

(Continued from Page 16)

same ease that sheet and plate are welded. Little or no preheating is required with this rod, because the weld metal remains plastic for a short interval, long enough to absorb most of the cooling strains. A precaution with respect to the welding flame, is that it should never be permitted to become oxidizing. If anything, it should be slightly on the excess side of neutral.

The success of welding *nickel* and *monel* lies in keeping to a minimum oxidation of the welding puddle as the weld is made. Backhand technique, a slightly acetylene flame, and elimination of drafts, are pointers to be observed. A high grade of flux should be also used.

In welding *lead* a lead rod is added to a puddle which is quickly formed and just as quickly cooled by flipping away the flame before the puddle has a chance to run. When welding lead plates in a downward position, the second and third layers can be made with a continuous puddle, if desired.

Gas cutting has been centered mainly on two points—dimensional accuracy and regularity, or smoothness, of the cut surface. A definition of oxy-acetylene cutting: "The process of severing ferrous metals by means of the chemical behaviors of oxygen, in the presence of ferrous metals at a high temperature, to produce a kerf, or cut, of uniform width without burning the edges of the kerf, or cut."

Cutting of base metals is largely dependent upon the skill of the operator who must develop a technique for preheating, introducing the oxygen stream and controlling the speed of the cut.

Some base metals, such as cast iron, present unique problems in cutting, due to blowing, etc., which tends to force the cutting tips to produce an erratic flame, and, as a result, makes a poor cut. This may be avoided by blowing the burned metal away from the tip. The best cutting operators cause the flame to attack the metal at an angle of less than 45° with the base metal surface until a hole is burned through the base metal, through which burned or refuse metal may pass away from the tip.

Electric Welding

Many claims are made for A.C. and D.C. welds by their exponents. Briefly, their respective merits may be stated, as follows: A.C. arc welds for successful operation require 250 amperes or more, whereas D.C. arc welds operate successfully under ordinary conditions with 20 to 300 amperes and more. The D.C. current produces about 60 per cent of its heat at the positive terminal. Usually there is an advantage in having the greater amount of heat in the base metal and, for this reason, the base metal is usually connected to the positive terminal and the electrode to the negative terminal where only about 40 per cent of the heat is concentrated. Periodic reversal of polarity has an even distribution of heat between the base metal and the electrode. Generally speaking, A.C. machines are not common but basically require only a transformer and rheostat to

take power from the ordinary power circuit, whereas a special D.C. generator is required for the D.C. arc, employing some type of prime mover.

The chief claim for superiority of the A.C. arc is in the prevention of magnetic blow encountered in the use of heavier currents For all purpose work D.C. arc welding is more satisfactory because A.C. current does not operate smoothly under 250 amperes, under which condition enough heat is being generated to permit the arc to be smooth.

As in the case of oxy-acetylene welding, the knowledge of base materials and electrodes to be used in the arc-welding process is essential. At first bare wire was used for the electrode and many difficulties were encountered due to the affinity of atmospheric gases for the highly heated weld metals. A few years ago a discovery was made whereby the weld metal could be protected from atmospheric gases by shielding the arc with inert gases. This is commonly known as the "shielded arc process"—a chemical coating being applied to the electrode which, when heated or consumed by the arc, generates the inert gases that protect the weld metal. Special electrodes, properly shielded, are manufactured for practically all the base metals. Successful arc welding is, in a large measure, dependent upon the proper selection of the electrode to be used.

The welding industry has an enviable reputation for safety, but in order to nullify the natural hazards which do exist a welder must use good common sense and have experience in the work which he is doing. The following illustrations should be followed to avoid carelessness: In welding a barrel which has been used for oil, live steam should be put in the bung hole for at least 10 minutes, and should continue to flow through the welding or cutting operation if heavy oil has been used. Sealed, or pressure tight, containers may be highly dangerous, due to expansion of air. A number of fatal accidents have resulted from welding cast iron steam engine pistons. Eliminate the danger by removing the plug.

Use caution in welding closed containers. Toxic or asphyxiating gases may result in poisoning or suffocation. Ventilation is an extremely important factor when a weld is made indoors. Transferring acetylene from one cylinder to another is hazardous and is never done by the manufacturer. Another hazardous practice is using oxygen in place of compressed air for driving power tools. Welding and cutting are the only two purposes for which oxygen should be used. Never use tanks to rest the object you are welding.

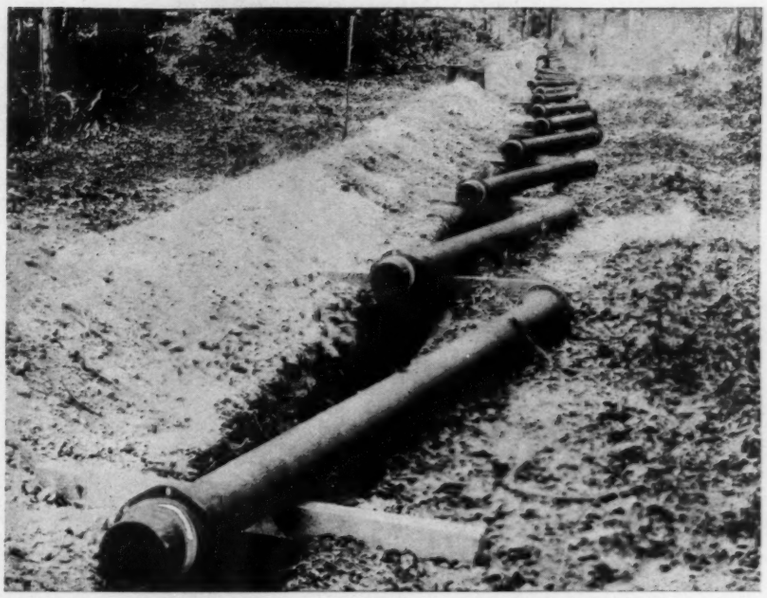
Gas Women Complete Cooking Course

Thirty-one women members of The Peoples Gas Light and Coke Co., were awarded diplomas in January by Anna J. Peterson, director of home service of the company, for completion of a special course in cooking.

Municipal Plant for Lyons, Kansas

Citizens of Lyons, Kan., voted favorably February 11 on the issuance of $75,000 in bonds for the construction of a municipal gas plant. A total of 597 votes were cast in favor of the proposition and 135 against.

TESTS AFTER 3½ YEARS SERVICE FIND PIONEER HIGH PRESSURE CAST IRON GAS TRANSMISSION LINE BOTTLE-TIGHT



Widely discussed high pressure (400 pounds) natural gas transmission line composed of 6-inch Mono-Cast Doublex Simplex Cast Iron Pipe, installed in 1931 by Memphis Natural Gas Company, was recently inspected and reported by D. C. Shaffer, V-P and Gen. Mgr., to be "holding up fine—no leaks and absolutely perfect in every way." For literature on this pipe, write American Cast Iron Pipe Company, Birmingham, Alabama.

U. S. SUPER de LAVAUD

"Impact Resistance Doubled"

◆

Made by

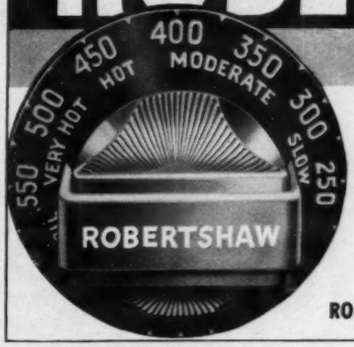
U. S. PIPE & FOUNDRY COMPANY

BURLINGTON, N. J.

Sales Offices and Foundries throughout the United States

ROBERTSHAW

THERMOSTATS



Over two million in daily use on gas ranges. Hundreds of thousands in daily use on water heaters, space heaters and every type of gas appliance.

Dependability Counts!

ROBERTSHAW THERMOSTAT COMPANY · YOUNGWOOD, PA.

Welsbach
HOTZONE
Self-action storage gas water heaters

Approved by A. G. A. Laboratory
Heaters are made in all domestic sizes with 300 lb. test galvanized or Everdur tank.
Write for Details
WELSBACH COMPANY
Gloucester City, N. J.
SAN FRANCISCO, CALIF. CHICAGO, ILL.

FRASER
Radiant Front Console
Equipped with Fan

Velgrain Finish
The heater that smiles while it warms
Manufactured by
Fraser Furnace Company
Stockton, California
Distributed by
H. R. Basford Company
San Francisco Los Angeles

Dean H. Mitchell

Guy M. Johnson

C. V. Sorenson

Active Year Due for Northern Indiana Public Service

THE year 1935 has opened for the Northern Indiana Public Service Co. with an aggressive merchandising and advertising campaign under the leadership of Dean H. Mitchell, who became vice-president and general manager of the company on October 15 of the preceding year. Mr. Mitchell has been in the utility field for a number of years, having been vice-president and comptroller of the Northern Indiana Public Service Co. before becoming its operating head. He entered the utility field from the accounting department of the American Sheet and Tin Plate Co., a subsidiary of the United States Steel Corp. His advancement was rapid. He attended the University of Chicago and, during the World War, was an ensign in the United States Navy.

Mr. Mitchell has named Guy M. Johnson, who is widely known in the utility industry, as general gas superintendent in charge of production, transmission and distribution of gas for the entire company. Mr. Johnson, who had been in charge of the South Bend division of the company for many years, formerly was with the U.G.I. interests, serving in various parts of the country. His successor at South Bend is George V. Bennett, who has been technical advisor at the company's general headquarters at Hammond.

In connection with his policy of aggressive sales, Mr. Mitchell brought C. V. Sorenson to Hammond as general sales manager. Mr. Sorenson was merchandise sales manager of the Public Service Co. of Indiana and formerly was manager of the old Interstate Public Service Co. at Attica.

In announcing the changes of personnel, Mr. Mitchell stated that promotions had been made in line with the policy of recognizing merit within the companies.

W. E. Nichols, widely known throughout the gas industry, was also appointed supervisor of gas operations.

When Natural Gas Came to Muskegon, Michigan

(Continued from Page 13)

office. The appliances of approximately 9,000 customers were converted in a period of of about three an one-half months. The burner drilling portion of the work required about two months of this time.

Natural gas was turned into the last district on December 10, 1934.

From the very beginning of negotiations for the purchase of natural gas from the Mecosta County field to the completion of the pipe line, all contracts, rates and other relevant matters pertaining to the enterprise were consummated and conducted with the full knowledge and approval of the Michigan Public Utilities Commission.

At the outset, officers of Muskegon Gas Co. and American Michigan Pipe Line Co. had determined upon a policy of keeping all interested parties frankly informed as the project progressed. Through direct contact, newspaper articles and advertisements, the state Public Utilities Commission, city officials and the public were apprised of latest developments. It is intended that this article, from a promotional standpoint, confine itself to the acquisition of the househeating load. Whatever reference is made to other load-building activities is merely incidental.

Rates

The natural gas from the Mecosta County field, upon analysis, proved itself a sulphur free gas averaging 1,065 B.t.u. per cubic foot. Following are the rates for househeating:

General Heating Rate

Who May Take the Service: Any customer using gas for any purpose provided gas is used as the principal fuel for building heating.

Rate: First 2,000 cu. ft. or less per month, $3.22. All over 2,000 cu. ft. per month, $.50 per M c.f.

Discount: Above rate is net and applies if monthly bill is paid within 10 days of rendition. After such period, $.10 per M c.f. will be added, provided that the amount added shall not be less than $.25 nor more than $5.00 per bill.

Minimum Charge: $3.22 net or $3.47 gross per meter per month.

Contract: No time limit.

Optional Heating Rate

Who May Take the Service: Any customer using gas for building heating only, who will contract to use or pay for a minimum of 100,000 cubic feet per month during eight months of the heating season.

DIRECTORY

Byllesby Engineering and Management Corporation

Wholly-owned subsidiary of Standard Gas and Electric Company

231 South La Salle Street, Chicago
New York Pittsburgh San Francisco

• HYDRAUGER •

MODERN HORIZONTAL BORING MACHINE

For Underground Installation of Pipe and Conduits. Avoids damage to costly pavements and saves time. Send for Bulletin.

HYDRAUGER CORPORATION, Ltd.
116 New Montgomery St. • San Francisco, California

SMITH-EMERY CO.
CHEMISTS — ENGINEERS — INSPECTORS
Technical service for gas producer and distributor, appliance manufacturer and dealer
920 Santee Street Los Angeles, Calif.

SUBSCRIPTION ORDER BLANK

WESTERN GAS

810 So. Spring St.,
Los Angeles, Calif.

Gentlemen: Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of your invoice, remittance will be sent to cover (1 year $2.00) or (2 years $3.00). Other than U. S. $3.00 per year.

Name .....

Title .....

Company .....

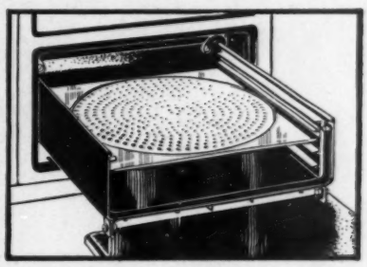
Address .....

City and State .....

Date .....

WEDGEWOOD'S NEW COOKING PRINCIPLES!

Patented ASTOGRIL BROILER



This latest type broiler consists of a thick cast aluminum grill and circular reservoir within a roller-bearing mounted pull-out drawer. The grill is preheated and sears on both sides simultaneously to seal in juices and improve flavors. It broils small pieces like oysters, bacon, vegetables, etc. that would fall through a grated type broiler. It is convenient to use and very easy to clean. Makes broiling the better and healthier way of cooking.

SPEED *plus* SIMMER BURNERS

A 2-in-1 aluminum burner operated by a single gas valve. The entire burner or the simmer flames can be used alone as desired. Without using special utensils the simmer flames make waterless or semi-waterless cooking possible on every top burner! This method of cooking is healthier, tastier, more convenient. Avoids excessive steam and odors in the kitchen—pots do not boil dry or scorch. Descriptive folder mailed on request.

JAS. GRAHAM MFG. CO.
San Francisco, Los Angeles and Newark, Calif. • Portland, Oregon

OVER 1,000,000 SATISFIED USERS IN THE WEST

NO-OX-ID
IRON RUST
The Original Rust Preventive

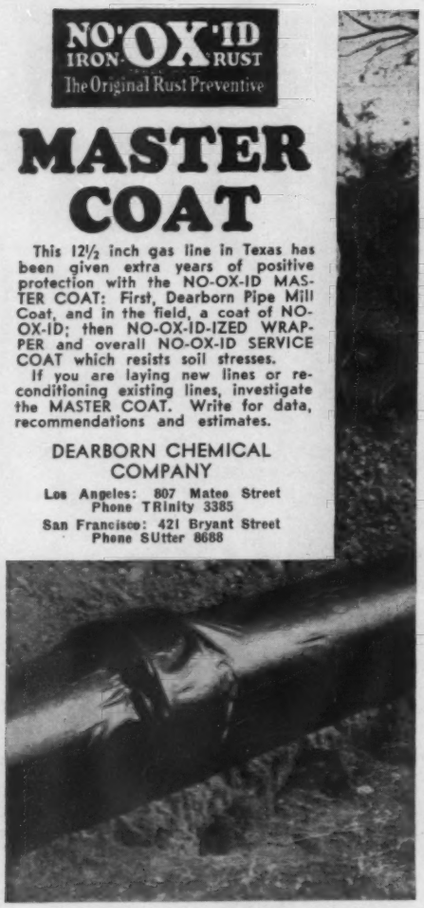
MASTER COAT

This 12½ inch gas line in Texas has been given extra years of positive protection with the NO-OX-ID MASTER COAT: First, Dearborn Pipe Mill Coat, and in the field, a coat of NO-OX-ID; then NO-OX-ID-IZED WRAPPER and overall NO-OX-ID SERVICE COAT which resists soil stresses.

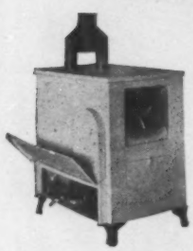
If you are laying new lines or reconditioning existing lines, investigate the MASTER COAT. Write for data, recommendations and estimates.

DEARBORN CHEMICAL COMPANY

Los Angeles: 807 Mateo Street
Phone TRinity 3385
San Francisco: 421 Bryant Street
Phone SUtter 8688



MODERN EFFICIENT



Safe
Quick
Positive!

Pacific Forced Air Unit Heater *Illustrated*

PACIFIC'S *Complete* LINE of Gas Appliances Include:

- Floor Furnaces • Cabinet Heaters
- Wall Heaters • Gas Steam Radiators
- Radiant Heaters • Water Heaters
- Gravity Furnaces • Forced Air Furnaces • Unit Heaters

Write for complete information on any or all items

Pacific Gas Radiator Co.
Main Office and Factory
Huntington Park, California
Oldest and Largest Manufacturer of Gas Heating Appliances in the West

Rate: All gas used per month $.35 per M c.f.

Discount: Above rate is net and applies if monthly bill is paid within 10 days of rendition. After such period, $5.00 will be added per bill.

Minimum Charge: $35.00 net or $40.00 gross per meter per month for eight months.

Contract: One year.

With Pocahontas and Coke ranging in prices from $8.00 a ton and up, and with fuel oil averaging around 6.5c per gallon, it can readily be seen that the foregoing rates afforded a decided advantage to any sales organization engaged in the promotion of gas househeating.

The Sales Job

When the likelihood of natural gas service became a certainty many speculative opinions were voiced as to the possibilities for acquiring an appreciable amount of househeating business during the first season. These important factors presented themselves:

1. Natural gas would not be available until late fall or early winter.
2. What effect would the previous, and fairly recent natural gas experience have on sales?
3. What effect would the "depression complex" have on load building efforts?
4. The company had no househeating sales organization.

In order to circumvent the first obstacle a temporary househeating rate was approved by the Michigan Public Utilities Commission and made effective immediately. This rate provided 530 B.t.u. water gas for househeating customers at a cost equivalent to that of the natural gas when it would be available. Briefly, this rate was as follows:

$3.22 per M per month for first 4,000 cu. ft. or less. All over 4,000 cu. ft. per month $.25 per M c.f.

It may be of interest to note at this point, that before natural gas was turned on in even a part of the distribution system, a daily sendout of about 700,000 cu. ft. was raised to a maximum of 3,000,000 cubic feet per day, due to the acquisition of househeating business, with little or no distribution difficulties.

It is a foregone conclusion that the adoption of the $.25 per M c. f. rate for househeating was instrumental in making it possible for the gas company to obtain a substantial amount of business which it would not have had this season, had it deferred this promotional step until natural gas was actually being supplied.

In regard to the second item—what effect would the previous, and fairly recent natural gas experience have on sales—it was felt on the one hand that the 850 customers who had once enjoyed the comfort, cleanliness and convenience of automatic gas heat would easily be persuaded to return to natural gas as fuel. On the other hand it was also known that much had to be done to restore public confidence in a Michigan natural gas supply insofar as its duration is concerned. There were quite a few customers who, during the first natural gas era, had purchased conversion and gas designed househeating equipment at considerable expense. Their faith in natural gas service had been severely shaken.

When in December, 1930, it became necessary to change back to manufactured gas at a cost approximately twice that of the natural gas, the 850 househeating customers were unpleasantly shocked by their ensuing gas bills. This situation was further aggravated by the fact that the changeover came at the height of the heating season. This resulted in a decline in the number of househeating customers which was further accelerated by the increasing stringency of the times.

Frankly, it never will be known whether the former natural gas epoch helped or hindered the company's 1934 househeating drive.

Some customers remembered the blessings of automatic gas heat and needed little persuasion to go back to it; some customers remembered only the high bills after manufactured gas service was resumed and needed lots of persuasion.

Some of the old gas househeating customers had installed oil equipment and were satisfied; others had done likewise and were not. And so it went. This much was certain—most of them had sold or junked their gas househeating equipment and all of them required every assurance which it was possible to give that the new natural gas supply from Mecosta County is a lasting supply.

It is to be recalled that when natural gas service was discontinued in December, 1930, Muskegon Gas Co. had 11,192 customers, approximately 850 of whom were using gas for househeating—a househeating saturation of 7.6 per cent. When the 1934 househeating drive started—about September 1—Muskegon Gas Co. had 8,731 customers, of whom 38 were using gas for househeating.

Having described the circumstances which surrounded the 1934 househeating drive, an account of what was done about item three as enumerated in a previous paragraph—"What effect would the 'depression complex' have on load building efforts?", and item four—the fact that, "The company had no househeating sales organization," follows:

Muskegon had been "hard hit" by the depression. For the most part its residences are modest workingmen's homes—some good, some indifferent, and some actually bad.

In order to overcome the "depression complex" and break down sales resistance, it was felt that low prices and long terms were desirable. Therefore, a cash installed price of $135.00 on standard boiler or furnace conversion was established. A standard conversion in this instance refers to the conventional type burner having an hourly input of 100, 200, or 300 cubic feet. The great majority of installations were of the 200 cubic feet size.

Other types of gas heating equipment were correspondingly priced. A carrying charge was added for extended payments, domestic customers were given a maximum of 60 months in which to pay and commercial installations were restricted to a maximum 36-month payment period.

All furnace and boiler conversions were equipped with plain room thermostats; automatic humidifiers were included in furnace jobs at no extra cost; likewise a pressuretrol was standard equipment on steam jobs, and an aquastat was included in hot water jobs. Low water cut-offs were recommended for steam conversions, for which the customer was charged.

With the 60-month plan a customer could pay for an automatic gas burner at the rate of $2.78 per month. The gas company fea-

tured the slogan, "Less than 10c a day pays for an automatic gas burner."

It was decided to divide the territory served by the company into eight sales districts and assign one househeating salesman to each district. This meant about a thousand meters per salesman.

A sales organization was quickly recruited. In selecting the personnel of this organization, the hiring of experienced gas househeating salesmen meant the employment of out-of-town men; the hiring of local men meant, for the most part, the employment of inexperienced men insofar as gas househeating is concerned.

With considerable unemployment in the community, it was decided to favor local men wherever and whenever possible. Incidentally, both American Michigan Pipe Line Co. and Muskegon Gas Co. adhered to this policy in all phases of the natural gas program—pipe line construction, change-over, installation, and sales.

As a result, of the eight salesmen hired, one was an experienced out-of-town gas heating salesmen and the remaining seven were local men. Two of the seven local men had some experience in selling gas heat, one had been a general heating contractor, and the remaining four had nothing to recommend them as gas househeating salesmen other than an indication of intelligence and an acceptable personality.

These salesmen were paid a salary of $60.00 per month plus 10 per cent commission on the cash installed price of all standard conversions. Commissions on unit heaters, gas designed furnaces and boilers, circulating heaters, etc., differed. By and large, however, a salesman's commissions on all types of gas househeating equipment averaged close to 10 per cent.

A three-day intensive training period was conducted for the sales staff. The advantages of gas heat, cost comparisons with other fuels, prices and types of equipment which the company handled were drilled into the men. Sales meetings of about an hour's duration were held each morning as the campaign progressed.

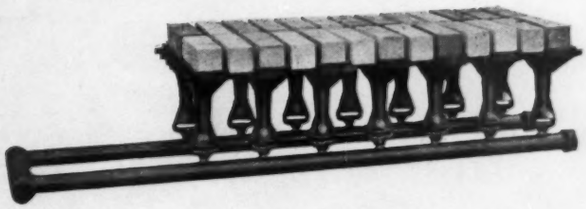
No effort was made to cover too much territory or go into a mass of details. The men were instructed to refer any unusual situations to the heating engineering department which had been created. This department consisted of four experienced gas househeating engineers.

The salesmen were given a "rule of thumb" method for estimating heating costs. It would cost so much per season to heat an average four-room house—so much for an average five-room house—so much for an average six-room house—and so on. They were instructed to use some judgment in their estimates. For instance, if a five-room house had large rooms, figure it as a six-room house—make allowances for unusually high ceilings, poor construction, etc.

In addition to the information an order for househeating equipment usually contains, a space was provided on the order blank for the salesman's estimate of the customer's season heating cost. When taking an order the salesman was instructed to place the amount of his estimate on the order, a copy of which was left with the customer.

All orders were turned over to the heating engineering department. Upon receipt of an order by this department a househeating en-

CONTROLLED RADIANT HEAT ASSURES MAXIMUM UTILIZATION OF HEATING SURFACES



The Type 313 N. G. E. Gas Burner utilizes to the fullest extent the principle of radiant heat. By use of a burner supported refractory bed, the gas is burned in a restricted and localized zone. This results in accelerated combustion and produces a source of heat practically without flame and of high combustion efficiency.

The burner proper is a modified venturi and operates on the principle of entraining a major part of the air required for combustion by the pressure energy of gas issuing from an orifice into the venturi throat of the burner. This feature permits operation with less back draft than any other type of burner. Because mixture of air and gas occurs in the mixing tube of the burner, the entire combustion space is available for combustion, rather than for "mixing the gas and air" as with other types of burners. For this reason the Type 313 requires less combustion space than with any other type of atmospheric burner.

Ruggedly constructed and designed for operation under the most severe conditions, the Type 313 N. G. E. Gas Burner has an operating range of from 2" of water to 3 lbs. per square inch.

The N. G. E. line includes gas burners, regulators and control equipment for the gas and oil industry.

NATURAL GAS EQUIPMENT INC.

Petroleum Securities Bldg. Los Angeles | **1123 Harrison St. San Francisco** | **Arizona distributors Crane Co.**

LOOK TO THE PIONEERS FOR CONTINUED LEADERSHIP

Johnson No. 8 Adjustable Torch and Melting Pot

An inexpensive though efficient tool designed for heating soldering coppers and melting soft metals. The burner may be adjusted to any angle or may be removed and used as an efficient hand torch. No blower needed. Write for free catalog.

JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

Western Representative:
C. B. BABCOCK CO.
135 Bluxome Street
San Francisco, Calif.

Eastern Representative:
J. H. McPHERSON
250 Stuart Street
Boston, Mass.

gineer accompanied by an assistant visited the customer's premises. The heating engineer made a complete survey of the premises and inspected the heating plant. From this survey he checked the salesman's estimate of heating costs.

Salesmen had been instructed to advise customers that no orders were binding upon the customer until a complete check by the heating engineering department had been made. If the salesman's estimate of heating costs was too low, or the wrong type of equipment had been specified, the salesman had to resell the job to the customer.

With a hastily organized sales crew of mostly inexperienced men—(it had to be so because natural gas was not a certainty until August 28 and there was no time for extensive preparation)—one may well wonder that considerable trouble did not arise. It was, indeed, surprising to find out how few low estimates or wrong equipment recommendations were made.

Most of the installations were conversions of furnaces and boilers. In the territory served by Muskegon Gas Co., there are many homes without basements. A large number of circulating heaters were sold. Quite a few unit heaters were installed and a few gas designed furnaces and boilers were placed in customers' homes.

Orders came in at a rate which exceeded expectations. Incidentally, they continued to come in long after the heating season was well under way. An original crew consisting of seven fitters had to be expanded to 38.

Employee and dealer cooperation was earnestly solicited. Newspaper and radio advertising, window displays, truck banners, tire covers, and buttons for employees bearing the legend "Ask me about gas heat" played an important part in the campaign.

When December 31, 1934, was reached the picture had assumed the following aspect: Whereas, at the beginning of the househeating drive, Muskegon Gas Co. had 8,731 customers, 38 of whom were using gas for househeating, on December 31, 1934, the company had 8,881 customers of whom, in round numbers, 1,000 were using gas for househeating, or had ordered their equipment. There may have been 30 or so in the latter class.

Throughout the campaign orders were received on which customers requested that installation be deferred until they had consumed a supply of fuel which they already had in storage.

Thus, in a four months' campaign a househeating saturation of 11¼ per cent had been achieved. And this equipment was sold, not rented.

While it is true, that if a customer refuses to keep up his payments and the equipment he purchased on the deferred plan must be repossessed, what he has paid in effect constitutes a rental, nevertheless, it seems equally true that if a customer enters into a transaction designated as a purchase and not a rental, his mental attitude toward that which he has acquired is different, and more favorable for the vendor.

Recent reports indicate that removals to date are between 3 and 4 per cent of the total number of installations. Collections experience has been good.

Comparatively low-priced natural gas has every indication of being a boon to Muskegon Gas Co.

Visualize, if you will, the plight of a small gas company which of necessity had a relatively high rate—average $1.56 per M cubic feet for the first 2,000 cubic feet, and other steps priced proportionately—struggling to maintain its financial integrity against the keenest sort of competition. And, presto! Overnight that $1.56 per M changes to an equivalent rate of $.80 per M cu. ft. Not only househeating but also range sales, water heater sales, refrigerator sales—everything—picked up amazingly. An outlook which was once gloomy has taken on a rosy hue.

Unfortunately, perhaps, every small gas company, confronted with the same situation, cannot find a similar solution to its difficulties. But, if there is any lesson in this story, it may be this—gas service is a "cinch" to sell provided the cost of the commodity is right, and the cost and terms for equipment are also right.

Grateful acknowledgement is made to the Peoples Gas Light & Coke Co. of Chicago whose radio broadcasts have helped educate people in the Middle West to the advantages of gas heat.

Grateful acknowledgment is also tendered to manufacturers whose representatives were of invaluable assistance throughout this activity.

Unless the "bottom falls out" of everything, 1935 looks very promising.

50th Anniversary Sales Campaign Featured by Geo. D. Roper Corp.

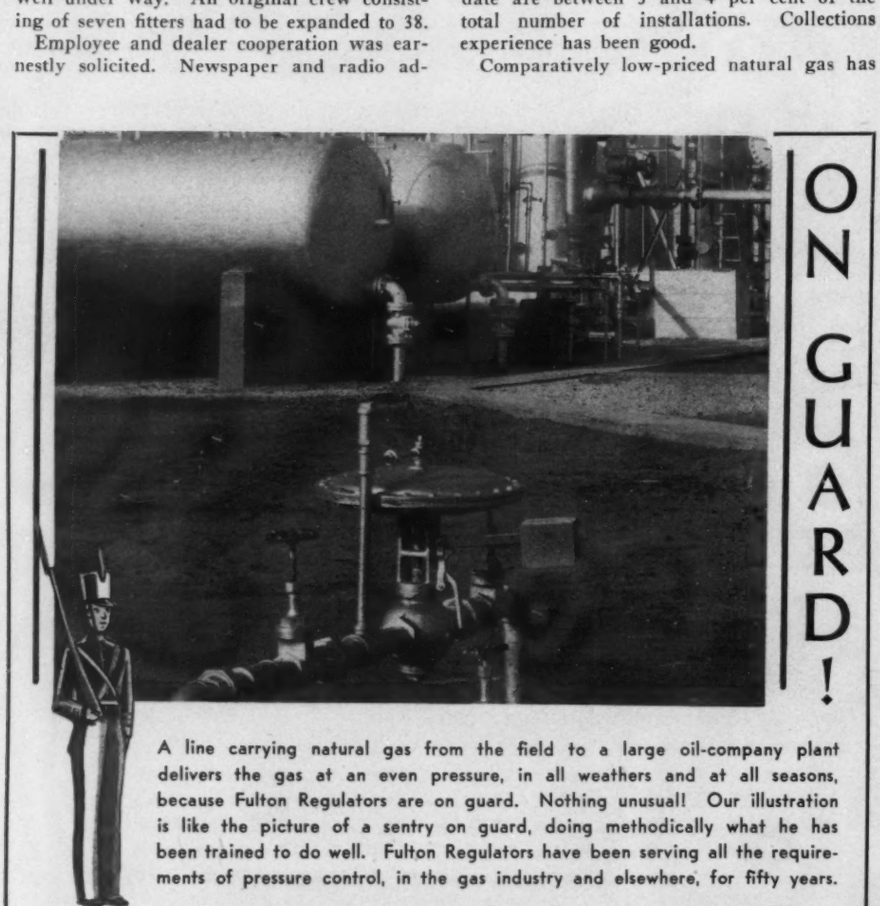
Commemorating its 50th anniversary the Geo. D. Roper Corp., Rockford, Ill., has launched its 1935 sales campaign built around the national gas range prize contest being sponsored by the American Gas Association.

Roper's 50th anniversary sales plan, which is fully described in a handsome sales portfolio bound in gold, includes two newspaper advertising series, one concentrating on the company's new No. 14 Series range offered as the "50th Anniversary Special" and the other stressing the advantages of gas as a fuel, consumer literature display signs, racks, cards and backgrounds, baby Roper banks, suggested consumer copy for letters and radio, sales manuals, and miscellaneous books.

In addition to the A.G.A. national campaign, Geo. D. Roper Corp. is promoting two special contests for salesmen and display managers. From February to July $10 cash prizes will be awarded monthly for the best "talk-of-the-month," while the best displays over a 6-months' period, built around the 50th anniversary theme will draw $25 as first prize, $15 as second prize, and $10 as third prize.

W. H. Hodge Celebrates 25th Anniversary With Byllesby

Celebrating his 25th anniversary with the Byllesby Engineering and Management Corp., Chicago, Ill., W. H. Hodge, vice-president and manager, sales and advertising department, late in February was honored at a banquet attended by business associates and intimate friends.



A line carrying natural gas from the field to a large oil-company plant delivers the gas at an even pressure, in all weathers and at all seasons, because Fulton Regulators are on guard. Nothing unusual! Our illustration is like the picture of a sentry on guard, doing methodically what he has been trained to do well. Fulton Regulators have been serving all the requirements of pressure control, in the gas industry and elsewhere, for fifty years.

The Chaplin-Fulton Manufacturing Company

28-40 Penn Avenue **Pittsburgh, Pa.**

10th ANNIVERSARY NUMBER

WESTERN GAS is combining three feature issues in one BIG edition of May, 1935—our 10th Anniversary Number, Annual Pipe Line Number, Annual Natural Gas Number—all under one cover. This feature issue will be distributed to delegates attending the Annual Natural Gas Convention at Memphis early in May.

The editorial mission of this issue is to provide an authoritative and exhaustive portrayal of the past 10 years in the gas industry. This offers an unusual background against which the manufacturer may review developments in his own products during the same period.

Tie in YOUR PRODUCT with this Graphic Review of Gas Industry Progress during the Last Decade

THE entire industry will be interested in your advertisement if you make it historical; compare your 1925 models with your present 1935 line; point to devices or equipment in which you have done the pioneering for the industry; this type of story from you will have unique interest in a 10-year review edition. Your developments are a part of gas industry progress and our May number is the opportunity for graphically describing them.

Gas service has come a long way in the past 10 years, particularly in the natural gas branch. This is the period of long distance transmission, change-overs to mixed or straight natural gas service, new standby processes. A new technique of distribution and utilization has evolved, and in this comparatively short period the industry has become aggressively sales-minded. WESTERN GAS for May will tell this story, largely in the form of short and specialized progress accounts. Some of these will be staff-written, some contributed by industry leaders who have had a part in the progress. Together they will comprise a colorful history of gas service growth over the last eventful decade. This issue will be preserved as a lasting record, adding extra value to your message in its advertising pages.

MAKE YOUR SPACE RESERVATION NOW!

Two pages $300.00—one page $150.00—one-half page $90.00—one-third page $65.00—one-sixth page $35.00—one additional color $30.00 extra. Regular contract rates apply to contract advertisers. Advertising forms close April 15th. Make your space reservations NOW!

★ UNRIVALLED IN CIRCULATION AND ADVERTISING ★

1925 ★ **WESTERN GAS** ★ 1935

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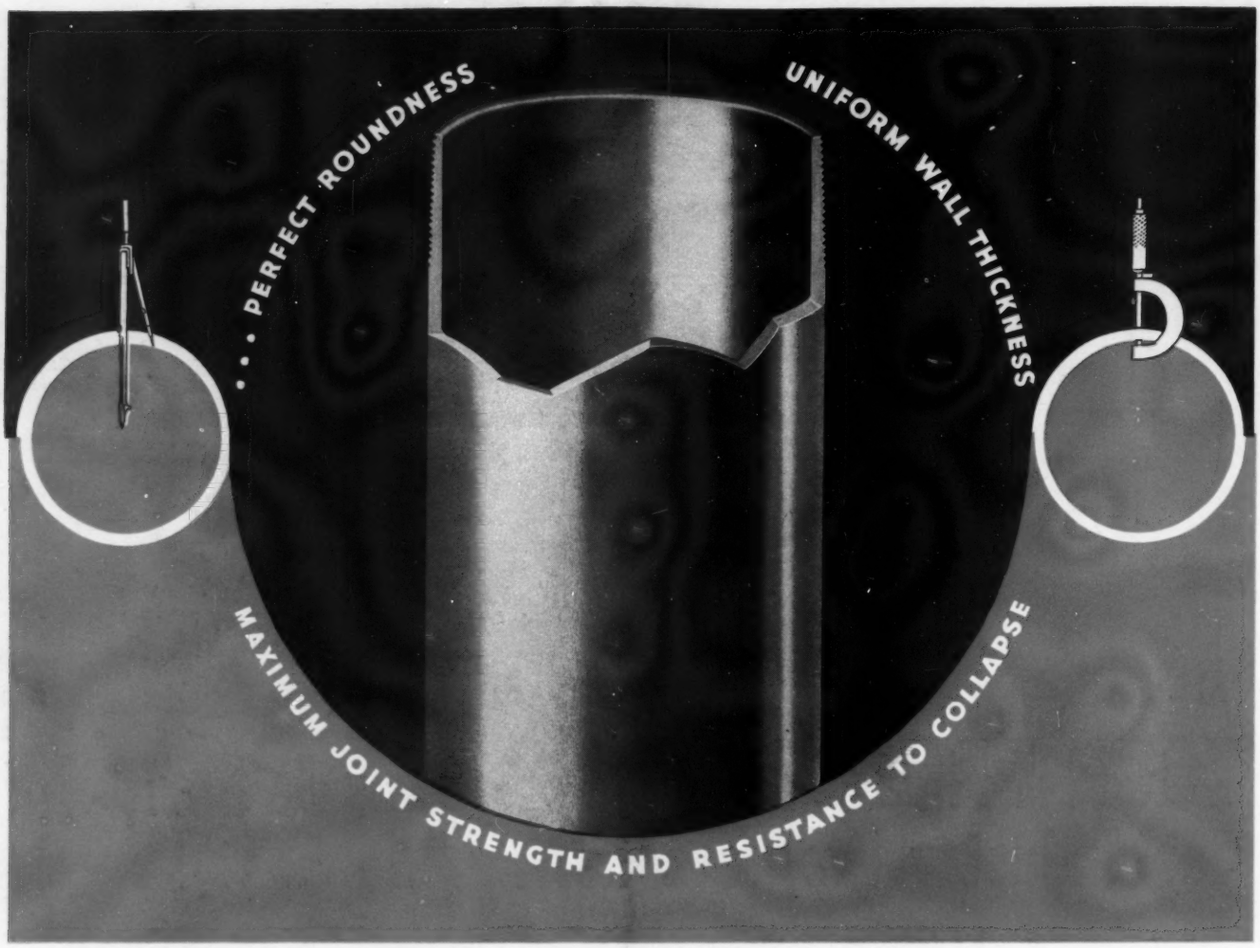
122 SOUTH MICHIGAN BOULEVARD, CHICAGO, ILLINOIS



Casing collapse, and joint failure in both casing and tubing, cost the oil industry huge sums of money annually. To cut down the loss, Republic offers a better casing and tubing—Republic Electric Weld—made by a process that insures maximum joint strength and increased resistance to collapse.

Aside from the physical properties of the metal itself, the two most important factors in reducing failures in casing and tubing are roundness and uniform wall thickness—both serving to increase resistance to collapse and insuring a uniform amount of metal under the root of every thread.

Republic Electric Weld Casing and Tubing are made from flat-rolled steel, uniform in section and grain structure. This flat steel is cold-formed to shape and then welded by Republic's modern process employing electrical resistance. By no other commercial method can casing and tubing be produced so nearly perfectly round and so uniform in wall thickness.

Republic Electric Weld Casing and Tubing are as dependable as skilled metallurgists and advanced mill practice can make them. Try them in your next well. The reports from your men in the field, during and after installation, will confirm your judgement.

REPUBLIC
ELECTRIC WELD
CASING • TUBING

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO